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NOVEMBER 1996 ISSUE NO.92

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Page 53

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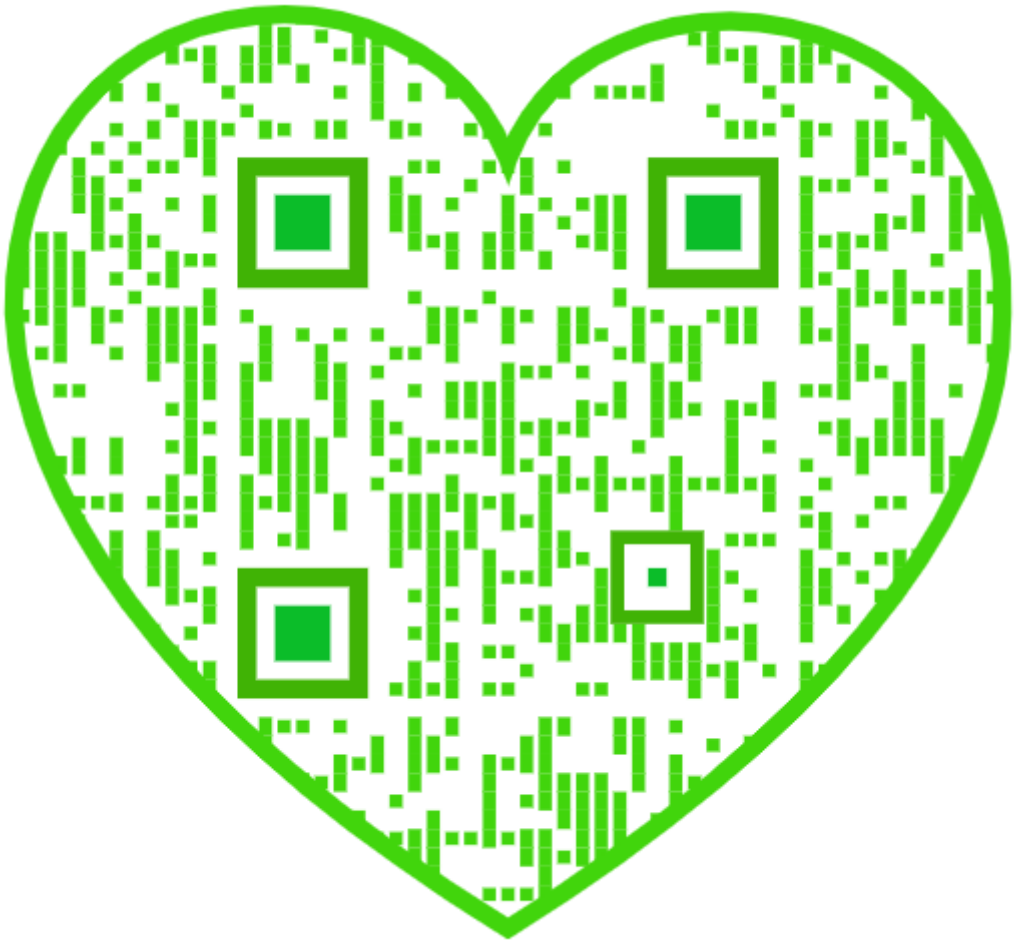

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Correspondence Writer DON MOSTROM
Contributing Editors KIM DOWNING, DAVE HENDERSON, LORNA JOHNSON, ROXANNE LeMOINE, BOB McFARLIN

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MPA

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In response to numerous user requests, we've recently added a searchable index to our world-wide web site. The index is a handy way to look for that lost project, tool test, or technique article from issues 1 through 90 of *WOOD* magazine. In addition, we've added a tour of Idea Shop® I, including photos, descriptions, and back-issue references for over 16 how-to-build projects from this popular woodworking shop article. Also, check out our five new WOOD PLANS® at our Company Store.

THE EDITOR'S ANGLE

Wanna have some fun this Christmas?

Proudly introducing the Snow Family—Mister and Missus Snow, and Little Snowflake—a fun group if there ever was one.

I don't know about you, but until a couple of years ago, hauling out the outdoor Christmas decorations each year was one of my least favorite honey-do's. It seemed like I never got into gear until after the first snowstorm. And climbing up on that 12' ladder to hang lights along the fascia board was a real nerve-racking adventure.

Thankfully, things have gotten much better ever since I made a pair of the slot-together deer that we developed for our magazine readers a couple years back. Now, when my wife has the urge for me to begin my yearly task, I just go up into the attic and reach for my ready-to-position decorations. It couldn't be easier. Or could it?

Since the deer have proven to be so popular with our friends and relatives (and so easy for me to set out each year), I'm going to try something new this year. Some weekend real soon, I'm going to build and paint the Snow Family (that's them in the photo *above*), and surprise my wife with them. Then, come January, after treating our holiday visitors with the fruits of my handiwork, I'll move the Snow Family up to the attic where they can pal around with the deer until I call them into service next year.

The Snow Family (our adaptation of a Judy Gale Roberts design) is only one of the four new outdoor ornament designs we've come up with for this holiday season. As with our other outdoor ornaments, the new ones are much too large to put in the magazine, but we do have plans available.

Here's a tip: If you want to be the Christmas-decoration champion on your block this year, turn to *page 98* and take a look at our selection of full-sized holiday *WOOD*® PLANS. You'll be glad you did. And so will your neighbors.

Larry Clayton

Print this article

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This issue's cover wood grain: poplar

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Publisher WILLIAM R. REED
Advertising Director **MARK HAGEN**

Display Advertising: 333 N. Michigan Ave., Suite 1401, Chicago, IL 60601 Phone: 312/853-2890 FAX: 312/580-0113
Eastern Advertising Manager **JAMES N. FORD**
Western Advertising Manager **WILL MURPHY**
Administrative Assistant **JENNIFER HAMMEL**

Direct Response Advertising: 1912 Grand Ave., Des Moines, IA 50309-3379 Phone: 515/284-3785 FAX: 515/284-3343
Direct Response Advertising Manager **LISA WIEMKEN**
Classified Advertising: Phone: 800/424-3090 FAX: 312/464-0512

Ancillary Sales Director **MAUREEN RUTH**
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TALKING BACK

Here's a biplane parts source

Several readers have contacted us about their difficulty finding the ½"-thick stock we used to construct the Barnstormin' Biplane featured in our August 1996 issue. If you find yourself in a similar situation—unable to find wood in the species or thickness called for in our projects—rest assured that we have a source for you. Heritage Building Specialties, 205 North Cascade, Fergus Falls, MN 56537 (call 800/524-4184) will supply all the individual pieces listed in the bill of materials for the biplane or most any other project featured in *WOOD* magazine. These pieces are cut slightly oversized in width and length, and are of the type of lumber called for in the bill of materials. The lumber for the Barnstormin' Biplane, kit no. W891, sells for $53.95 postpaid.

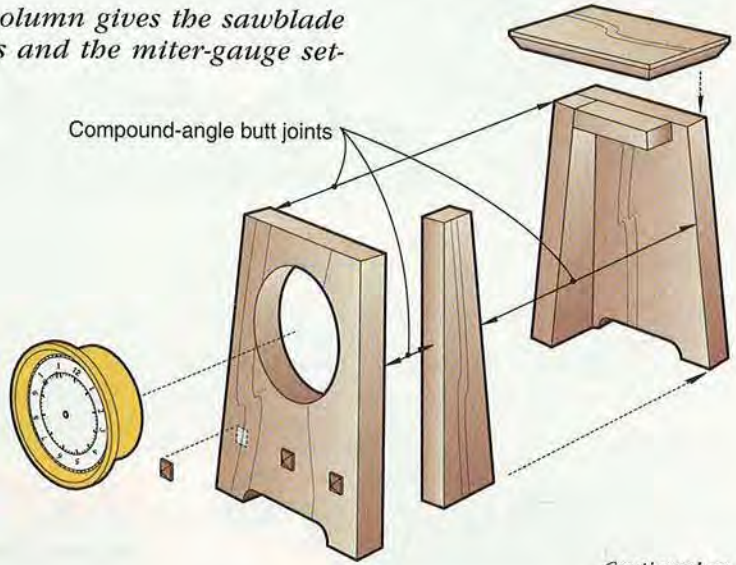
We welcome comments, criticisms, suggestions, and even compliments. Send your correspondence to: Talking Back, *Better Homes and Gardens® WOOD®* Magazine, 1912 Grand Ave., Des Moines, IA 50309-3379. To contact us via computer, use these on-line addresses: CompuServe: 74404,3516 Internet:74404.3516@compuserve.com

Clarification on the compound-miter article

The chart listing miter-gauge settings in the article "What Woodworkers Need to Know: Compound Miters" has a column under the Four Sides listing titled Butt. Would you explain what you mean by this title?

—*William Wichman, Lexington, Ky.*

This column gives the sawblade angles and the miter-gauge settings for cutting the joints when the end or edge of one side of a box butts against the side of another. See the drawing below *of our "Timeless Timekeeper" (November 1995 issue) for a design with compound-angled butt joints.*



Continued on page 8

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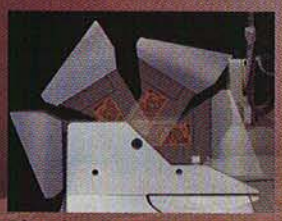

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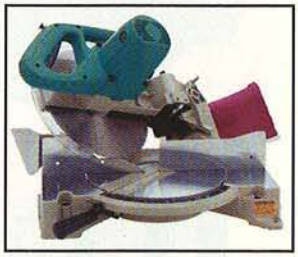

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Dakota Club Cab Sport

The New Dodge Dakota

Continued from page 4

CMT Tools CEO replies to letter in previous issue

I am writing in response to a letter from Bernard J. Bobinski that appeared in your October 1996 issue, page 4.

In his letter, Mr. Bobinski correctly stated that all router bits sold by CMT Tools are now manufactured in the United States. Over 90 percent of those bits are produced in our new state-of-the-art factory here in Florida. The balance are manufactured to our strict specifications by a few selected suppliers. Eventually all of our bits will be produced in our plant. Production in our own facility has given CMT Tools better control of quality, costs, and inventory, advantages that are translating into better service for our customers.

It is true that most of our router bits used to be manufactured in Italy, and we have made occasional design changes during the transition to U.S. production. I take issue with Mr. Bobinski's assertion that the "definite difference" he noticed in the design of our Rail and Stile Set reflects a reduction in quality. There will continue to be design changes in some of our products from time to time, but I assure all of your readers that when CMT Tools alters a bit our intention is to improve, not reduce, quality. If CMT Tools was unwilling to embrace change, we never would have introduced bits with anti-kickback design and our trademark orange coating.

I regret that Mr. Bobinski saw fit to return a number of apparently unused router bits to CMT Tools, including some bits produced by our former supplier in Italy. I feel certain that had he given our American-made bits a chance he would have been pleased with the results. In any case, let me emphasize that customers who are unsatisfied with any of our products need only return the items for a full refund. That was CMT Tools' policy when we opened our doors over five years ago, and it will never change.

—Carlo M. Venditto, CEO, CMT Tools, Oldsmar, Fla.

How do I set my miter gauge to 85°?

The article "What Woodworkers Need to Know: Compound Miters" in the April 1996 issue calls for a miter angle of 85°. My miter gauge only goes out to 60°. How can I make that cut?

—Carl Hershberger, Scottdale, Pa.

Carl, we based this chart on the miter gauges in our shop. These gauges read 90° when square (perpendicular to the miter-gauge guide bar) and go out to a 30° setting. So, when our chart reads 85° for the miter gauge setting, you should adjust your gauge to 5° off the perpendicular.

We realize that many miter gauges read 0° when adjusted to square, and extend to a 45° or 60° angle. See the chart below *for the settings for these miter gauges.*

SIDE-TILT ANGLE	FOUR SIDES				FIVE SIDES		SIX SIDES		EIGHT SIDES	
	BUTT		MITER		MITER		MITER		MITER	
	blade°	miter°	blade°	miter°	blade°	miter°	blade°	miter°	blade°	miter°
5°	½	5	44¾	5	35¾	3½	29¾	2½	22¼	2
10°	1½	9¾	44¼	9¾	35¼	7¼	29¼	5½	22	4
15°	3¾	14½	43¼	14½	34½	10¾	29	8¼	21½	6
20°	6¼	18¾	41¾	18¾	33½	14	28¼	11	21	8
25°	10	23	40	23	32½	17	27¼	13½	20¼	10
30°	14½	26½	37¾	26½	30½	20	26	16	19½	11¾
35°	19½	29¾	35½	29¾	28¾	22½	24½	18¼	18¼	13¼
40°	24½	32¾	32½	32¾	26¾	25	22¾	20¼	17	15
45°	30	35¼	30	35¼	24½	27¼	21	22¼	15¾	16¼
50°	36	37½	27	37½	22¼	29	19	23¾	14½	17½
55°	42	39	24	39¼	19¾	30¾	16¾	25¼	12½	18¾
60°	48	41	21	41	17	32¼	14½	26½	11	19¾

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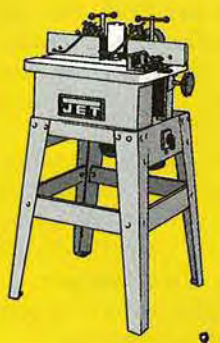

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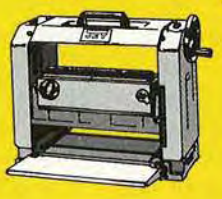

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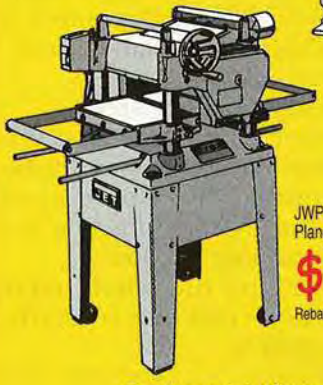

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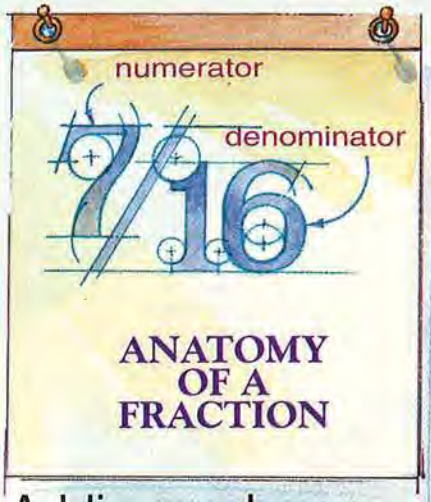
What woodworkers need to know

FACING FRACTIONS FEARLESSLY

Those pesky fourths, eighths, and sixteenths give lots of woodworkers fits. But, you can't get through a project without them. Here are some rules and hints to help you figure out fractions.



Adding and subtracting fractions

Problem: You're laminating three pieces of stock, one 3/16" thick, one 5/16", and one 7/16". How thick will the lamination be?

Solution: To add fractions that have the same denominator (the number below the line), simply add the numerators (the *numerator* is the number above the line). Then, put that sum over the denominator, 16, in this case. So, 3+5+7=15, giving us 15/16" for the thickness of the lamination.

A complication: What if you want to add 1/8", 1/4", and 5/16"?

Solution: To add fractions with different denominators, you must first convert them so they have the same (or a *common*) denominator. Generally, with woodworking dimensions you can't go wrong picking the largest in the group, 16 in our example, for the common denominator.

To convert a fraction to a different denominator, 1/8 to 16ths, for example, figure out how many times 8 (the denominator of the given fraction) will go into 16 (the denominator you want to use). Then, multiply both the numerator and denominator of the given fraction by that result to convert it to the new fraction. In the example, 8 goes into 16 two times, so multiply both the numerator and denominator by 2: (1×2)/(8×2)=2/16.

Following the same process, 1/4 becomes (1×4)/(4×4), or 4/16.

(As long as you multiply *both* the numerator and denominator of a fraction by the same number, you do not change the fraction's value. You also can reduce a fraction to its lowest terms by dividing both the numerator and denominator by the same number—4/8 becomes 1/2, for instance, when you divide both the numerator and denominator by 4.)

Using this method, the original three dimensions, expressed with a common denominator, become 3/16", 4/16", and 5/16". Adding them up like this (2+4+5)/16" gives 11/16".

Subtraction works the same way. If you plane 1/4" from a board that's 13/16" thick, what's the new thickness? 13/16"-1/4"=13/16"-4/16"=9/16".

Remember these steps:

1. Express all fractions in terms of a common denominator.

2. Add or subtract the numerators to find the new numerator.

3. Place the new numerator over the common denominator.

Improper fractions and mixed numbers

Problem: Sometimes your answer will be an *improper fraction*, something like 8/8 or 21/16. What do you do with these?

Solution: If the numerator and denominator are equal, the fraction equals 1. But, if the numerator is larger than the denominator, your answer can be expressed as a mixed number—a whole number and a fraction.

To convert an improper fraction to a mixed number, first determine the whole number. Let's look at the 21/16 example. Since we're in 16ths, 16/16 represents 1.

A glance at the numerator, 21, shows that 1 is the largest whole number contained in the improper fraction, since 16 goes into 21 only once. So, write down 1 as the whole-number portion of the answer, and take 1 away from the improper fraction by subtracting 16/16 from it: 21/16-16/16=(21-16)/16=5/16. This remainder, 5/16, becomes the fraction portion of the mixed number, 1 5/16.

Here's another example, 27/8. In this case, 1=8/8. Analysis shows that 8 will go into 27 three times (8×3=24), but not four (8×4=32). So, the largest whole number in 27/8 is 3. Then subtract 3, in the form 24/8, from the original improper fraction to find the remainder: 27/8-24/8=(27-24)/8=3/8. Combined with the whole number, this yields the answer, 3 3/8.

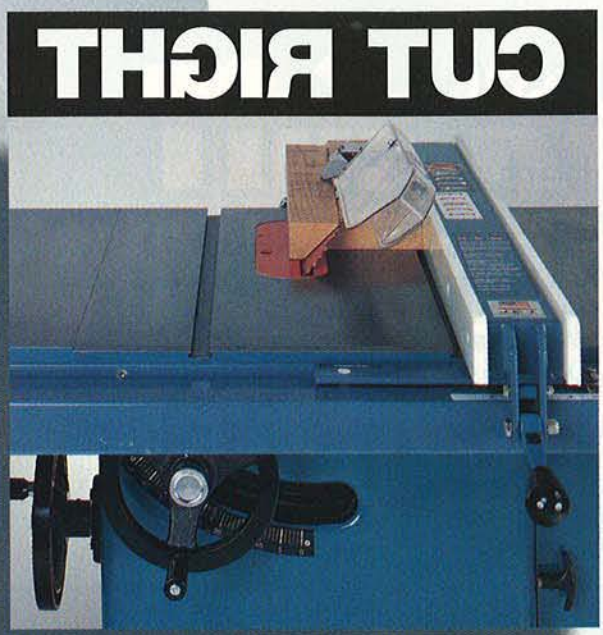
Remember these steps:

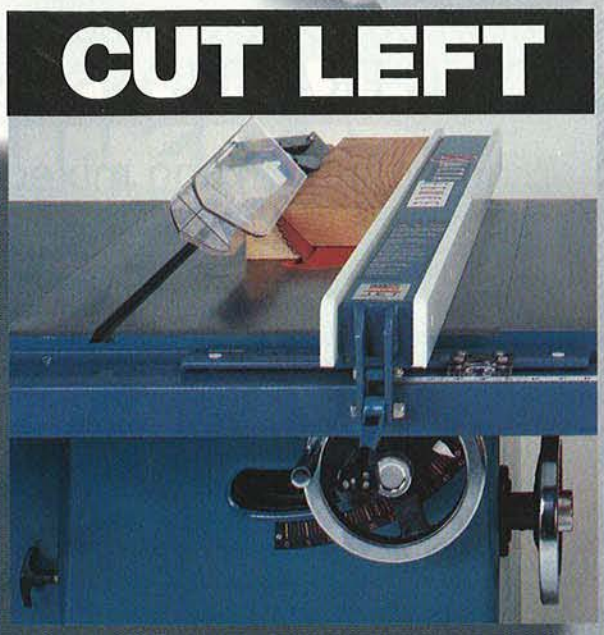
1. Determine the largest whole number in the improper fraction.

2. Subtract the whole number from the improper fraction to find the remaining fraction.

3. Combine the whole number and the remaining fraction for your answer.

Continued on page 12





Only JET offers a choice of either Left or Right cutting tilting arbor tablesaws.

Introducing two great new tablesaws from JET: one with a blade that tilts to the left, one with a blade that tilts to the right.

The XACTA SAW™ Left and the XACTA SAW™ Right join JET's line of quality woodworking tablesaws. Both saws feature a powerful 3 belt drive with either a 3 or 5 HP motor. The cast iron tables are the largest in the industry. Both saws also come fully equipped with the new, highly acclaimed XACTA FENCE™ System.

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Experts agree about JET. ***American Woodworker*** "Good features, performance and value. Delta and Powermatic, look out!" ***Fine Woodworking*** "The first thing we noticed was that the fit and finish were exceptional."

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What woodworkers need to know

FACING FRACTIONS FEARLESSLY

Continued from page 10

Adding or subtracting mixed numbers

Problem: What's the total length of two parts, one 5¾" long and another one 4⅝" long?

Solution: You can either add the whole numbers and fractions separately, or convert the mixed numbers to improper fractions. To convert, multiply the fraction's denominator by the whole number. Add the fraction's numerator to that result, then place the sum over the fraction's denominator.

It's easier than it sounds—you can probably do it in your head. Let's convert 5¾. First, multiply the denominator (4) by the whole number (5), 4×5=20. Add the fraction's numerator (3), 20+3=23. This becomes the numerator of your new improper fraction. The denominator is the one in the mixed number's fraction. So, 5¾=$^{23}/_{4}$. For 4⅝, 8×4=32+5=37, over the denominator 8, or $^{37}/_{8}$.

To answer the question, then, add $^{23}/_{4}$ and $^{37}/_{8}$. Make the common denominator 8 ($^{23}/_{4}$ becomes $^{46}/_{8}$). Thus, the total length is $^{(46+37)}/_{8}$, which is $^{83}/_{8}$, or 10⅜".

Remember these steps:

1. Multiply the fraction's denominator by the whole number.

2. Add the fraction's numerator to the answer from step 1.

3. Put the resulting number over the fraction's denominator.

Multiplying a fraction by a whole number

Problem: Will four 3/16" strips laminate to ¾"?

Solution: To multiply a fraction by a whole number, multiply the fraction's numerator by the whole number. The denominator remains unchanged. Thus, 4×3/16"=$^{(4\times3)}/_{16}$"=$^{12}/_{16}$", which reduces to ¾".

Remember these steps:

1. Multiply the fraction's numerator by the whole number to find the new numerator.

2. Place the new numerator over the original denominator, which remains unchanged.

A quick trick: dividing a fraction in half

Here's a quick way to divide a fraction in half. You can do this in your head in most cases.

Problem: You need to mark the middle of an edge on a piece of stock ⅝" thick. What measurement do you use for half of ⅝"?

Solution: Just *multiply* the denominator by two. So, half of ⅝"=$^{5}/_{(8\times2)}$"=5/16".

This works in reverse, too. To double a fraction, just *divide* the denominator by two. For example, 2×⅜"=$^{3}/_{(8/2)}$"=¾".

Figuring fractions with your calculator

Woodworking dealers sell calculators that allow you to enter fractions or mixed numbers directly, thereby avoiding the entire problem of manipulating fractions. Until you get one, you can add, subtract, multiply, and divide fractions using any standard floating-point calculator. Here's how.

Enter the fraction: Key in the numerator (say 5), hit the division key, then enter the denominator (say 8). The calculator will show a decimal point followed by several digits ending in 5. This is the decimal equvalent of the fraction, .625 in this case.

Do your calculations: To add or subtract fractions with the calculator, you'll have to write down the first fraction's decimal equivalent, or enter it in the calculator's memory. Then, convert the next fraction, write it down or add it to memory, and so forth. It's just about as easy to do it on paper.

But, you can multiply or divide the fraction you've entered simply by hitting the appropriate key, entering the multiplier or divisor value, and pushing the = sign.

Let's multiply ⅝ by 7. With .625 already showing on the calculator's display, push the times button, enter 7, then hit =. The display should now read 4.375.

This is the calculator's version of a mixed number. So write down the 4. Subtract it from the calculator display by pressing the minus key, entering 4, then pushing the = key. The display shows .375.

Return to a fraction: Now, convert this decimal number to a fraction. Look closely, first; it may be one you know, something like .25 (¼), .5 (½), .75 (¾).

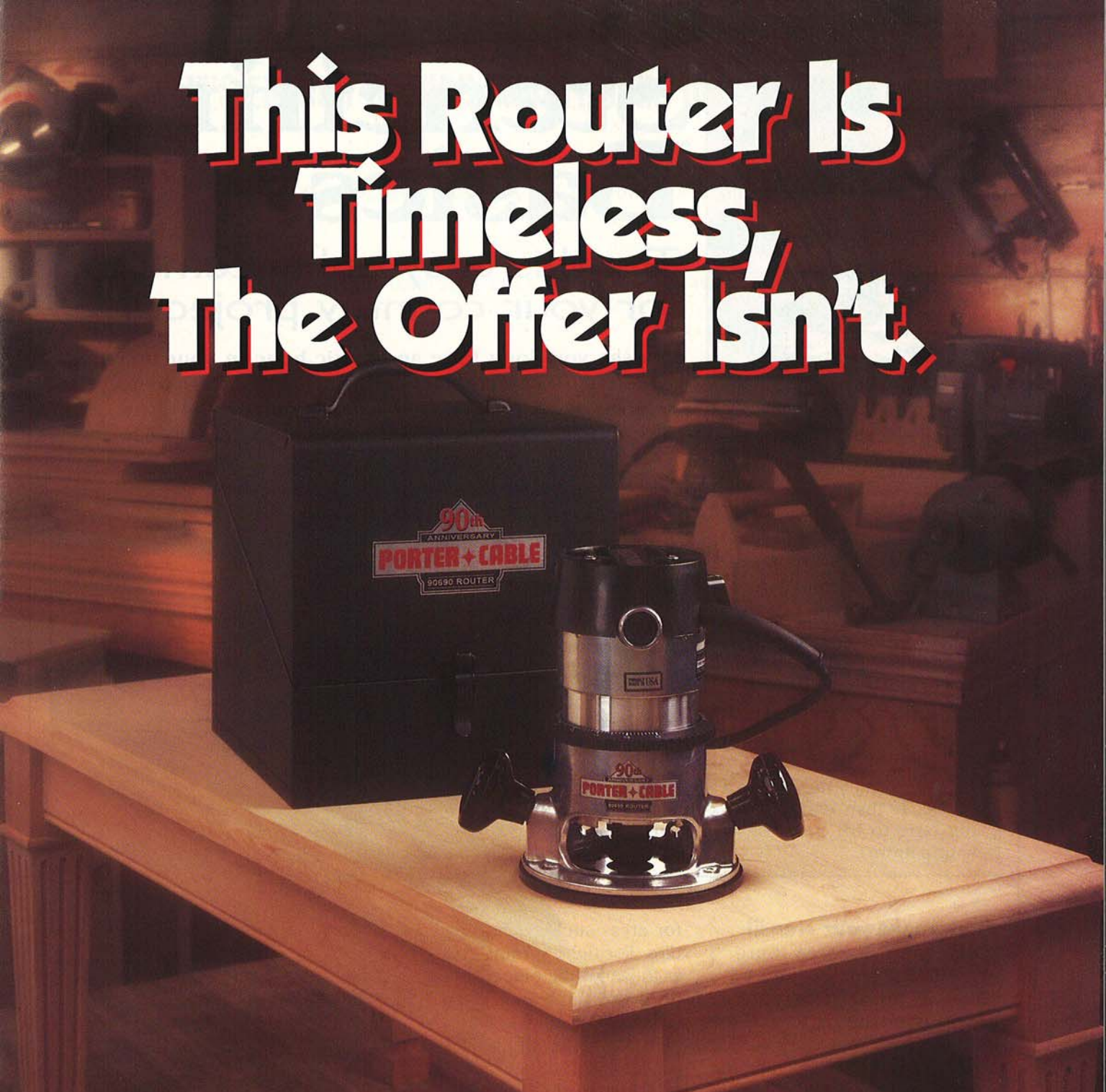
Otherwise, multiply it by 4, 8, or 16, depending upon the number of digits to the right of the decimal point. If there are 2 digits to the right of the decimal point, multiply by 4; if 3, multiply by 8; if 4, multiply by 16. (If it goes to 5 places, multiply by 32.) This multiplier will also be the denominator.

For our .375, depress the multiplication key, enter 8 (because there are 3 digits to the right of the decimal), then hit =. The display will show 3, which goes over 8 to form ⅜. Combine this with the whole number 4 to reach the answer, 4⅜.

This goes faster in practice than you can read it. Once you've figured a few fractions on your calculator, you'll breeze right through them.

Illustrations: Jim Stevenson Written by Larry Johnston

This Router Is Timeless, The Offer Isn't.



If you are ready to get serious about your project, then you're ready to invest in the router that woodworking professionals and cabinet makers everywhere depend on every day. Porter-Cable.

Make that investment now and you can get a 90th Anniversary Limited Edition version of this industry standard and the accompanying carrying case together at a very special price.

This commemorative router possesses all the classic features of the Porter-Cable 690 plus a couple of new ones that set it apart. Like the dazzling, aluminum housing and a unique, black carrying case that comes with every purchase.

However, the 90690 is a limited edition router. And when the tools are gone, so is the offer.

To own a piece of Porter-Cable's unparalleled 90 year history, and to start making a little woodworking history of your own, stop by your local Porter-Cable dealer, visit us on the internet at http://www. porter-cable.com or call 1-800-487-8665 (519-836-2840 in Canada) today. Because pretty soon, this offer will be history.

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THE WOODWORKER'S CHOICE

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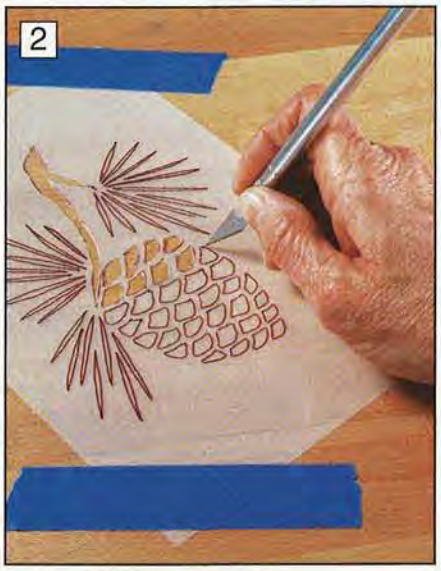
Stenciling Basics

Try this easy enhancement for your country projects

You say you don't have an artistic bone in your body? No matter. With stencils you can add painted designs to your projects with ease. Here's how we made the pine cone design featured on the table-lamp project on *page 62*.

Before starting, round up a few basic stenciling supplies. Most art- and craft-supply stores carry what you'll need:

- A sheet of Mylar, frosted on one side and at least 1" bigger all around than your design.
- X-acto knife.
- A fine-point permanent marker. (We use an Ultra Fine Point Sharpie made by Sanford.)
- Painter's masking tape (it's less likely than standard masking tape to lift paint or tear your pattern).
- Stencil paint. (We use Stencil Paint Creme by Delta Technical Coatings. The pine-cone design requires these Delta colors: burlap brown, bark brown, snow white, jungle green, and yellow citron.)
- Stencil brushes. These specialized applicators have short, stiff bristles that hold up to the quick up-and-down "stippling" motion used for applying stencil paint. (The pine cone requires ½", ⅜", and ¼" brushes.)



First, make your stencil

Place your pattern onto a smooth, flat surface, and lay a sheet of Mylar (frosted side down) over the pattern. Tape both pieces to your work surface as shown in *Photo 1*. Trace the pattern onto the Mylar with a fine-point permanent marker.

Separate the paper pattern and Mylar, and tape the Mylar to a smooth, flat surface that you can cut into slightly, such as a benchtop or scrap of plywood. With an X-acto knife, remove the areas that will receive paint, as shown in *Photo 2*.

Hold the X-acto knife at a low (about 20°) angle to the Mylar when making long, flowing cuts for areas such as the pine needles. For tight, turning cuts such as those for the pine cone scales, hold the knife nearly upright (about 70° should do it).

Position the stencil on your project. Then, secure it with masking tape.

Now, you're ready to paint

Most stencil patterns require paint colors that fall into three broad "values": dark, medium, and light. Generally you want to apply the medium colors first, then dark ones, and finish with light colors.

For the pine-cone design, start by masking off the needles. Then, dip just the bristle tips of

Continued on page 16

2-HP MOTOR. CAST-IRON BODY. RAZOR-SHARP TEETH. IT'S ENOUGH TO TURN MIGHTY OAKS INTO WEEPING WILLOWS.

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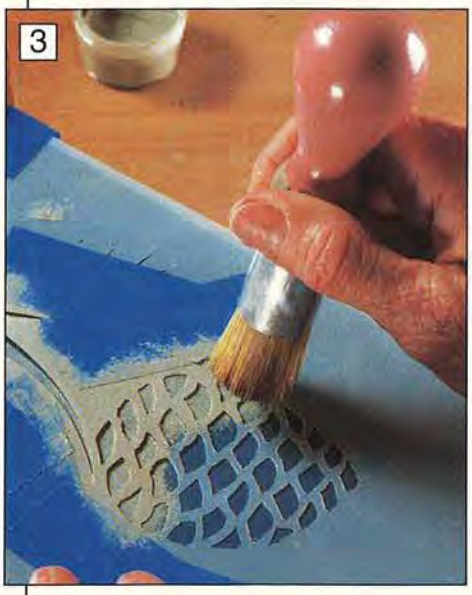
Stenciling Basics

Continued from page 14

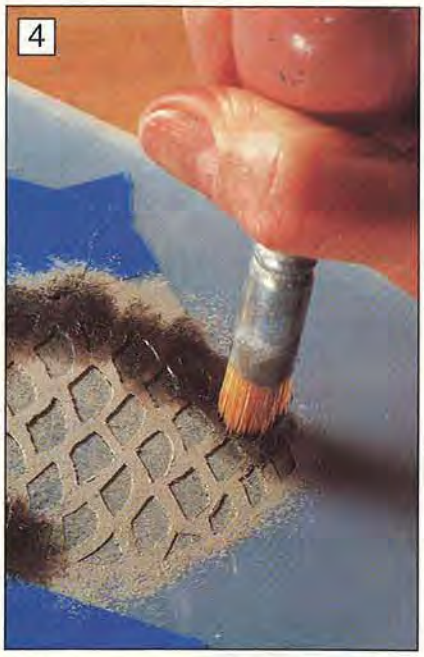
a ½" stencil brush into burlap brown paint. Dab off excess paint by lightly tapping the bristle tips onto a rag or paper towel. (Always use the straight up-and-down stippling motion. Never stroke these brushes.) Stipple the paint onto all of the cone and branch areas as shown in *Photo 3*. If you need to load your brush with more paint, remember to always tap off the excess paint before restippling the project.

Next, dip the bristle tips of the ⅜" brush into the bark brown paint. Again, tap off the excess.



Apply the paint to the outside edges of the cone as shown in *Photo 4*. (You don't have to wait for the previously applied paint to dry.) This helps give the cone shape by making it appear spherical. "Blend" the bark brown into the burlap brown by lightly stippling the border area between the two colors.

Switch to a ¼" brush and stipple the upper part of each cone scale with bark brown paint as shown in *Photo 5*. Then, stipple the intersection of the branch, as well as the right sides of the branch. (See the photo in the *table lamp project on page 62* for exact placement of the paint.) The idea is to place the darkest colors where shadows would fall.

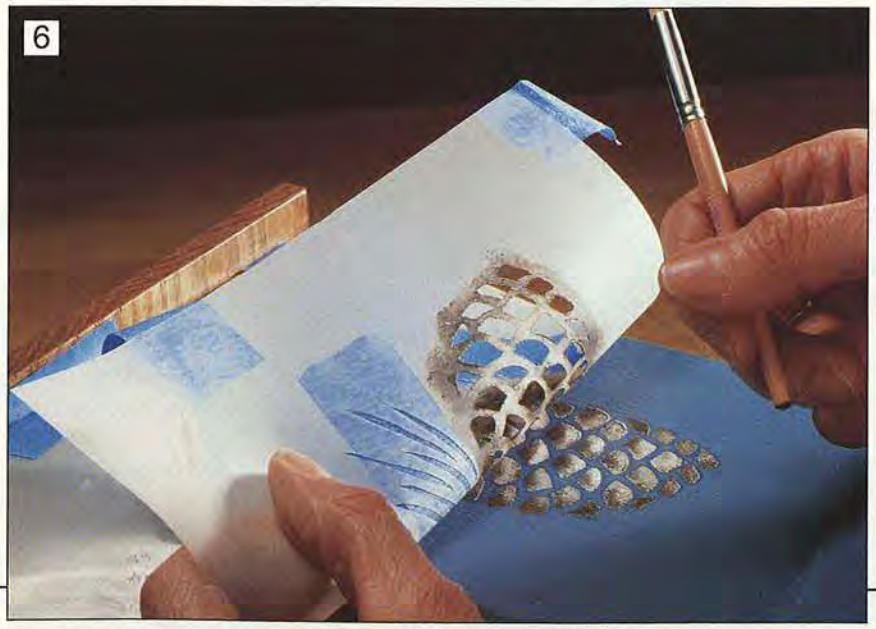


Thoroughly clean and dry the ¼" brush, and use it to apply snow white paint to the lower parts of each cone scale, applying more paint to the scales closer to the center of the cone. Add just a hint of white to the outer scales to simulate the look of freshly fallen snow. Occasionally lift the stencil as shown in *Photo 6* to see if you're achieving the desired look. Then, stipple white paint onto the left and upper edges of the branch.

Remove the masking tape, and stipple the needles with a clean ⅜" brush and jungle green paint. You can't mask the wet cone and branch, so be careful not to get green paint onto these areas. Then, highlight the needles with a light stippling of yellow citron paint applied with a clean, dry ⅜" brush.

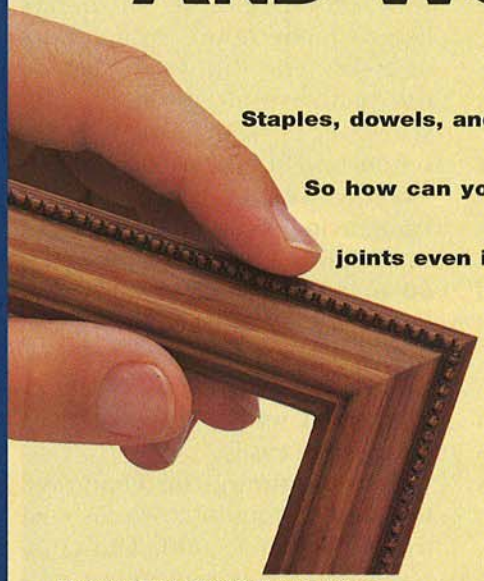
Remove the stencil from the workpiece and wipe it off for reuse as soon as you finish painting. Be careful not to smudge the wet paint on the project.

Written by Bill Krier
Technical consultant: Susan Henry
Photographs: Wm. Hopkins



THE NEW RYOBI DETAIL BISCUIT JOINER

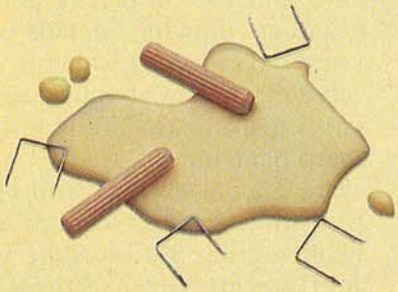
THE DIFFERENCE BETWEEN WOODWORKING AND WOODNOTWORKING.



Staples, dowels, and glue won't do. Standard-size biscuits won't fit.

So how can you make neat, tight, professional joints even in small stock? With Ryobi's new Detail Biscuit Joiner, that's how.

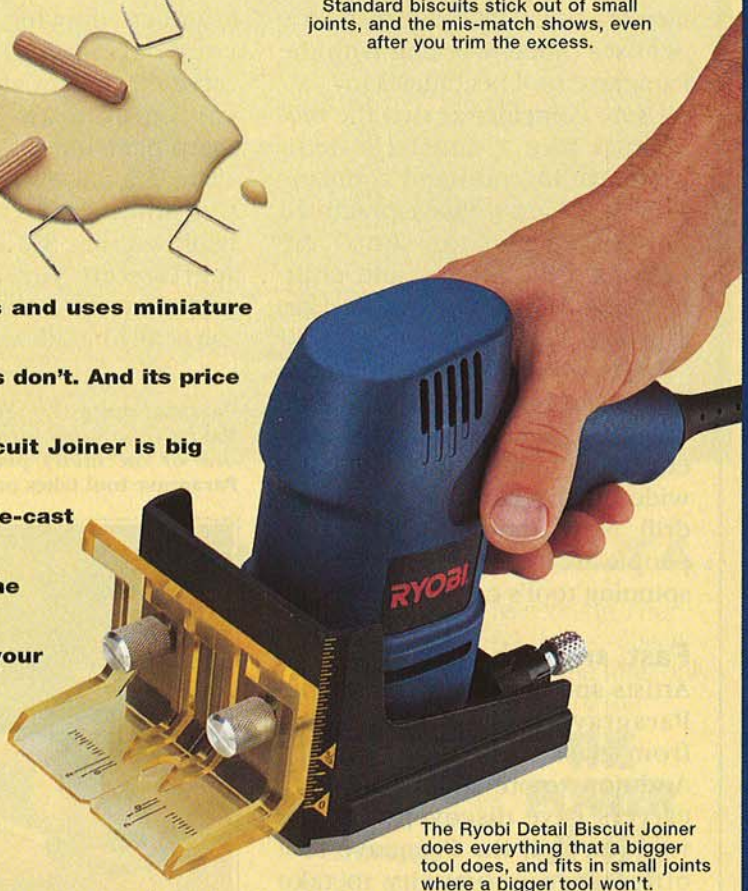
Standard biscuits stick out of small joints, and the mis-match shows, even after you trim the excess.



The new Ryobi Detail Biscuit Joiner uses miniature "Accu-biscuits" for neat, tight, professional joints.

This compact powerhouse cuts smaller slots and uses miniature "Accu-biscuits™" to fit where standard biscuits don't. And its price is as small as its biscuits. But the Detail Biscuit Joiner is big on performance, from its beefy motor to its die-cast base and see-through fence. So see the new Ryobi Detail Biscuit Joiner at your local home center. It'll get your wood working like never before.

Ryobi "Accu-biscuits" (actual size).



The Ryobi Detail Biscuit Joiner does everything that a bigger tool does, and fits in small joints where a bigger tool won't.

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CARVING WITH PINPOINT PRECISION

This ultrahigh-speed tool makes it easy

It takes tiny cutters to carve the fine detail lines that give carvings realism. With this ultrahigh-speed rotary tool, you can use the smallest bits you've ever barely seen.

The Paragrave ultrahigh-speed rotary carving tool *below right* emits a distinctive muffled shriek as it twirls its bit at 300,000 rpm. Once you rid your mind of the thought that the last place you heard a sound like that was in a dentist's office, working with the Paragrave tool becomes a joy.

It's no coincidence that the tool sounds like a dentist's drill. Paragrave inventor and company president Lew Jensen practiced dentistry in Utah until he unlocked the artistic and craft-working possibilities of the air-powered dental drill.

He made the heart of that device—a tiny air turbine—the basis for a rotary carving and engraving tool. Mouths still hang wide open when Lew wields his drill. Now, though, it's because people are awestruck by the fast-spinning tool's capabilities.

Fast, smooth cutting

Artists and engravers employ the Paragrave tool on everything from glass to precious metals. And now, more and more woodcarvers have discovered it. For woodcarvers, the Paragrave tool offers the opportunity to take detailing to a further, finer level than previously possible.

For carving fine details into wood, the ultrahigh-speed rotary tool offers several advantages. Foremost is the smooth, vibrationless power produced by the air turbine. This allows precise grinding or drilling. In fact, you can carve on eggshells with the smooth-running Paragrave.

In addition, it's docile and controllable. With its microscopic bit spinning fast and true, there's none of the grabbiness often associated with rotary carvers. And if you overload the cutter, it simply stalls without damage.

The Paragrave proves light and maneuverable, too. You can hold it just like a pen or pencil, in effect "drawing" details onto your carvings. And, you can carve those lines about as thin as you could draw them with a sharp pencil.

The minuscule burs and abrasive stones generate high heat while cutting. By adjusting how aggressively you use the tool, you can control the burning and use it to your advantage.

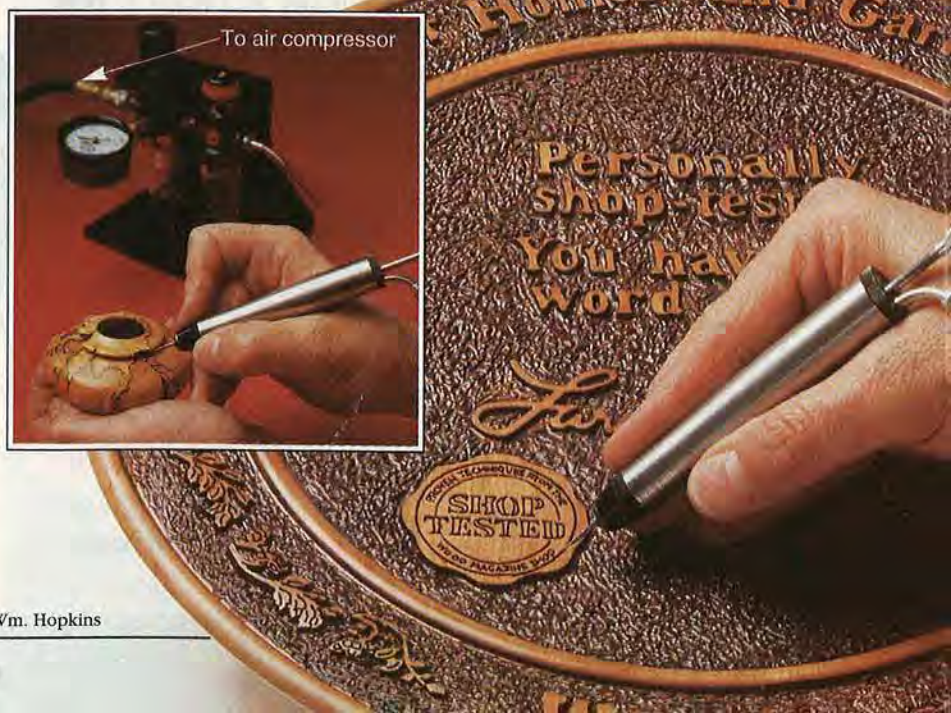
We give it a whirl

The Paragrave tool in the *WOOD®* magazine shop has logged many hours on a variety of tasks. The tool is so easy to use that several editors' youngsters successfully used it on school and hobby projects.

When it came my turn to try Paragraving, I carved the rim of a small turning to accent the spalted maple's markings, shown *below left*. The bowl was small to begin with, and the black fungal tracings in the wood were thin, but I was able to cut right up to them easily.

Kits containing the Paragrave tool and various accessories cost from $500 to $3,000. The company produces engraving patterns and instructional materials to cover almost any situation. For a catalog, write to Paragraphics Corp., 1455 West Center, Orem, UT 84058. Or, you can call 800/624-7415.

Carving along the spalting lines on the rim of a small turned vessel is just one of the many precise tasks the Paragrave tool takes on easily.



Written by Larry Johnston Photographs: Wm. Hopkins

Print this article

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Limited Edition Unisaw® includes 52" Unifence®, 50-tooth ATB combination blade, chrome handles and personalized insignia plaque.

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A HUNDRED DOLLAR REWARD FROM DELTA.

Old-timers will tell you that you're not just buying that Unisaw for right now. You're buying it for what it'll be doing for you ten, fifteen—maybe twenty years down the road. That's when you'll be glad you didn't try to save a couple hundred bucks way back in 1996—by settling for a saw that was touted to be as good as the Unisaw.

Feature for feature, the Unisaw stands unmatched, period. Equally important to consider, are parts and service. (Truth is, we can still provide parts and service today, for a 1937 Unisaw.)

All that said, we know how tempting it can be to save a few bucks by buying a knock-off from overseas. (Meanwhile—the Unisaw you've always wished for could be coming off our production line in Tupelo, Mississippi, as we speak.) This calls for a special deal.

Okay, here goes: Buy any Delta Unisaw between July 1 and December 31, 1996 and we'll send you a rebate check for $100. Even on this Limited Edition Unisaw, as seen on *The New Yankee Workshop*—a saw that'll be offered this one time only.

Call for the name of the Delta dealer nearest you where you can take advantage of this one-time offer. Delta International Machinery Corp., 800-438-2486.

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Delta is proud to nationally fund *The New Yankee Workshop* hosted by Norm Abram on PBS.

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Our top tip makes ripping boards with one rough edge a painless procedure.

Ripping boards with one rough edge can prove uncomfortable. If you use your hand to hold the wood flush against the fence, you're certain to get splinters. Yet a feather board like the one shown *above* won't hold tightly against an uneven edge.

Reader Allen Ulrich came up with a handheld ripping guide, *right*, that earned him the top-tip tool prize for this issue.

Your ideas could be worth big money if you send them to us. We pay $40 for each tip we publish, and you'll be eligible to win a tool prize for the best tip of the issue. To be considered, send a letter with a photo or drawing of the tip to:

Tips From Your Shop (and Ours)
***WOOD*® Magazine**
1912 Grand Ave.
Des Moines, IA 50309-3379

Our goal is to publish only new and original shop tips, so please send your idea only to *WOOD* magazine. Also note that we cannot return your submissions. Thanks, and keep those shop tips coming.

Kerry Gibson

GENERAL-INTEREST EDITOR

Ripping guide steadies rough-edged stock

Do you need a safe, secure way to rip lumber with one rough edge? This ripping guide costs next to nothing, and it keeps lumber tight against the fence.

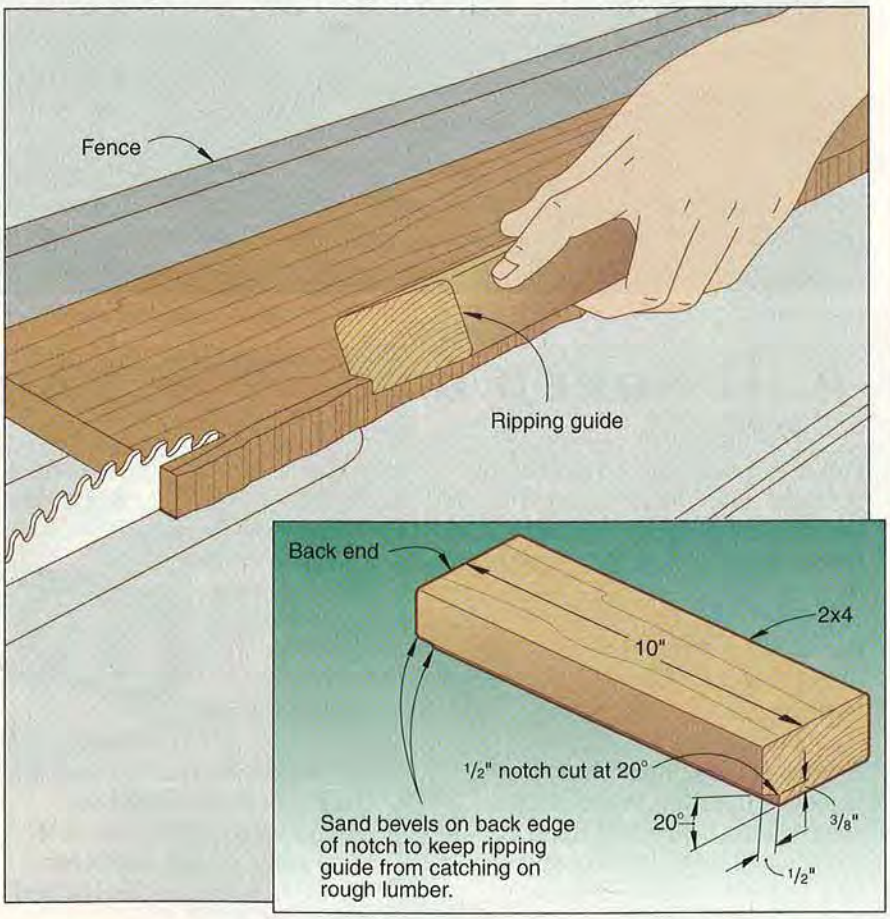
To start, cut the 1½×3½×10" ripping guide from a piece of smooth hardwood such as maple. Then, put a dado blade in your tablesaw, tilt it to 20°, and rip the angled rabbet as shown in the inset drawing *bottom*. Finish the guide by chiseling or sanding a slight bevel on the infeed end of the rabbet. This will prevent the guide from snagging on splinters or rough edges of the stock.

For submitting the best tip in this issue, Allen receives a Sears 8" Benchtop Radial-Arm Saw, model 23480N.

TOP SHOP TIP

To use the ripping guide, hold the rabbet against the rough edge of the board on the left side of the blade and about four inches behind the leading edge of the blade as shown in the drawing *below*. Then, push the workpiece snug against the fence, and feed the wood into the blade. Keep the ripping guide and your hand stationary as you feed the workpiece into the saw blade.

—Allen Ulrich, McClure, Ohio



Continued on page 22

THE DELTA Q-3.
LIKE A FORMULA RACE CAR WITH A BLADE.

We're talking pleasure here. Precision. Power. Wait 'til you get your hands on this high-performance machine. It just gets better and better around every turn. The Delta Q-3 18" Variable Speed Scroll Saw. A scroller's dream machine.

Its Quickset™ II Blade Changing System is the second generation of a Delta exclusive. The fastest in the industry. No wrenches, no aggravation, no wasted time while threading or changing blades. You'll find it on no other saw.

The arched, graphite composite arm eliminates vibration. So smooth and quiet you can listen to the sweet sound of your blade cutting wood, instead of your saw breaking the sound barrier. And at the very tip of that graphite arm you'll find the control switches. Right under your nose, instead of having to fumble around below the table.

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As you'd expect, the cast iron table tilts to allow bevel cutting. But what you might not expect is the fact that the adjustable steel stand also tilts forward to give you a better view of the job, and just the right angle for comfortable operation.

This one's ready to test drive right now at your Delta dealer. If you're ready to cut circles around the rest, call us for the dealer nearest you. Delta International Machinery Corp., 800-438-2486. In Canada, 519-836-2840.

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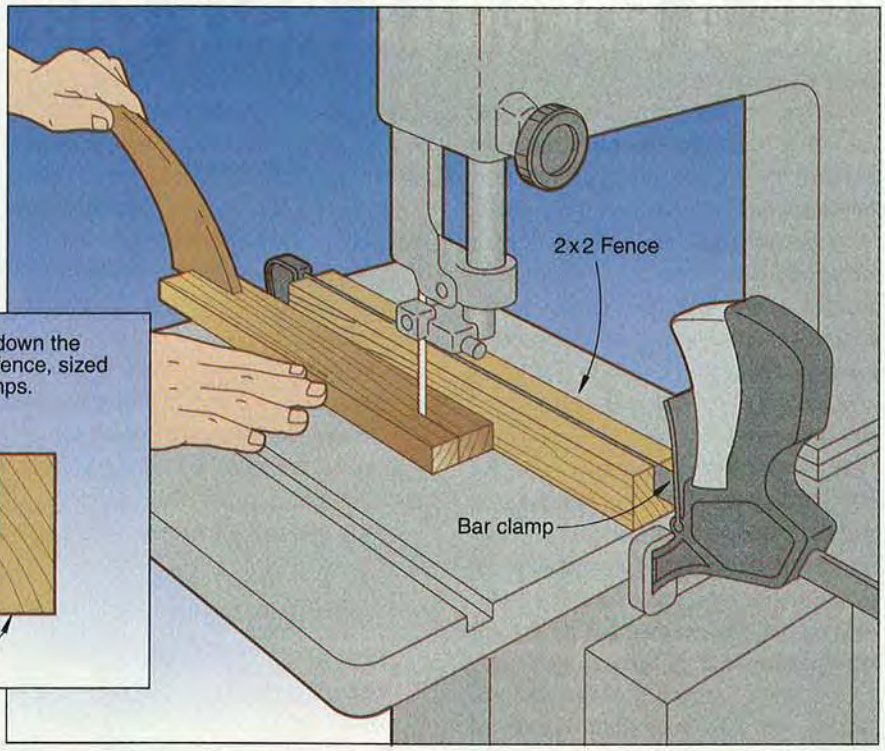
Delta is proud to nationally fund these two PBS programs for wooworkers.
The New Yankee Workshop *hosted by Norm Abram and*
The American Woodshop *with Scott Phillips.*

Continued from page 20

Bar clamp anchors fence for bandsaw or drill press

Need a fence for a bandsaw or a drill press? Here's an easy-to-make and inexpensive solution.

Cut a piece of 2×2 hardwood stock about ⅛" shorter than the machine's table, and joint all four edges to ensure the stock is square. Then, cut a groove down the middle of the stock that's as wide as your clamp bar is thick, and as deep as your clamp bar is wide. Now, just tap the bar of your clamp into the groove. To use the fence, position it parallel with the miter slot, then tighten the clamp to hold your fence firmly in place on the table.



—Glen E. Plum, Riverside, Calif.

$50 REBATE.
Contractor's Saw® with any Unifence,® Biesemeyer® Fence or Precision Saw Guide. (Shown here with Biesemeyer Homeshop Fence and accessory table board and legs.)

$50 REBATE.
14" Band Saw with 3/4 hp Model #28-275
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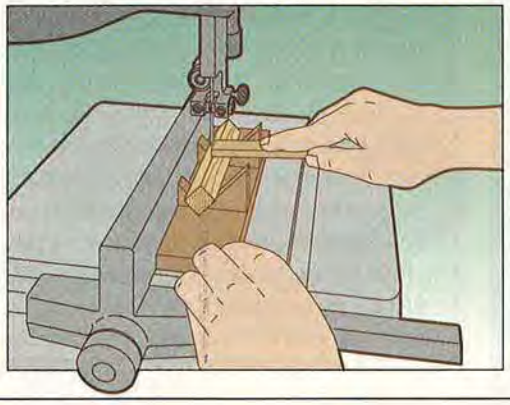
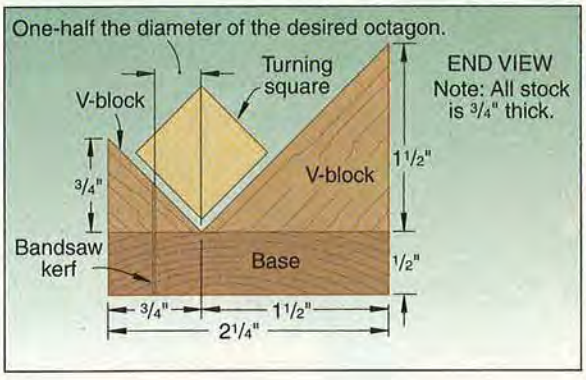
Carrier helps you bandsaw small turning squares safely

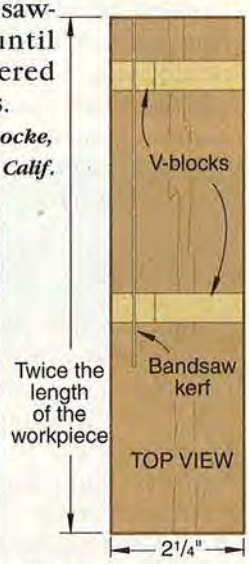
Chamfering the edges of a small turning square to get an octagon can prove dangerous on any power saw. This bandsaw accessory jig holds the stock securely and keeps your fingers away from the blade. The dimensions for the carrier, as shown *below middle,* are sized for a piece of ¾"-square stock, but you can modify the dimensions to accommodate almost any size of turning stock.

To build the carrier, cut out the base, and glue and screw the right-angle V-blocks to it as shown. Now, place the carrier on the bandsaw table, with the stock sitting in the V-blocks. Push the fence against the edge of the carrier, and position them so the horizontal distance from the kerf to the apex of the V-blocks equals half the diameter of the turning-stock octagon. Hold the stock in place with a small piece of scrapwood, and push the stock and carrier through the blade as shown. Cut along the length of the carrier base only far enough to trim the stock. Rotate the stock and repeat the sawing step until you've chamfered all four corners.

—Michael Locke, Huntington Beach, Calif.







Continued on page 24

$25 REBATE.
12" Variable Speed Lathe Models #46-700/701 with or without stand.

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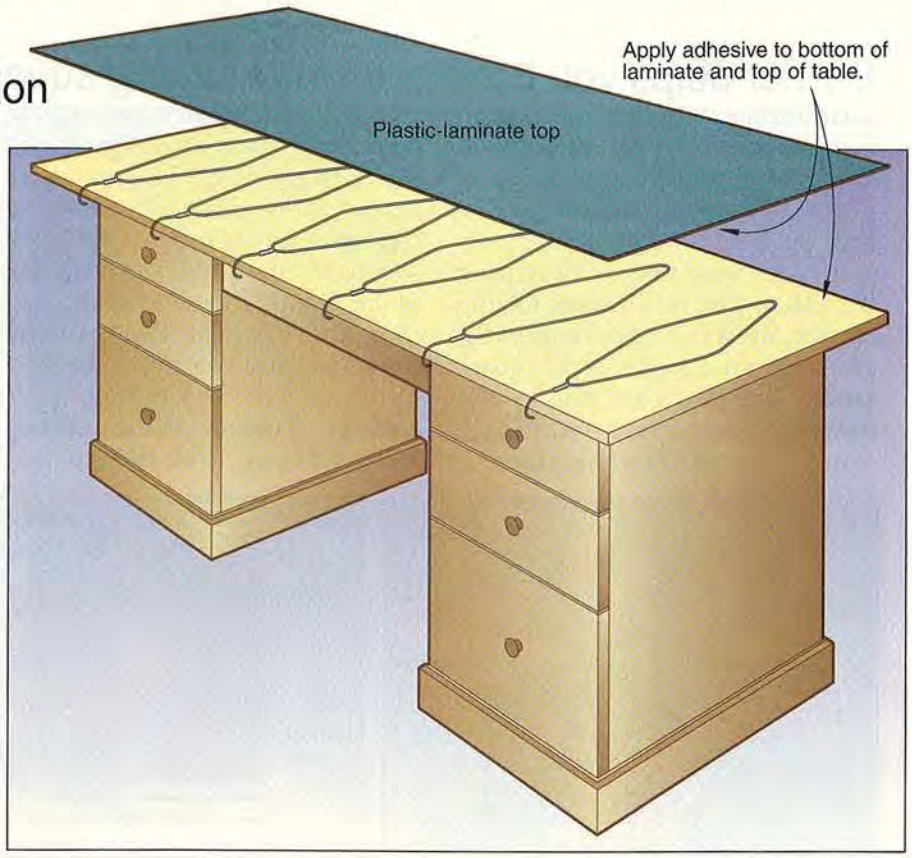
Continued from page 23

Coat hangers help position big pieces of laminate

If you've had trouble in the past aligning big pieces of plastic laminate over a surface coated with contact cement, the solution's hanging in your closet. Ordinary coat hangers make excellent positioning aids.

First, coat your surfaces with contact cement. While that's drying, grab some wire coat hangers and bend them into the elongated shape shown *right.* When the contact cement becomes tack-dry, lay the coat hangers as shown about 8" apart. Then, place your plastic laminate on top of the coat hangers, and align the laminate and substrate. Working from one end to the other, remove the coat hangers, and adhere the laminate to the substrate.

—Don Bendikson, Temecula, Calif.



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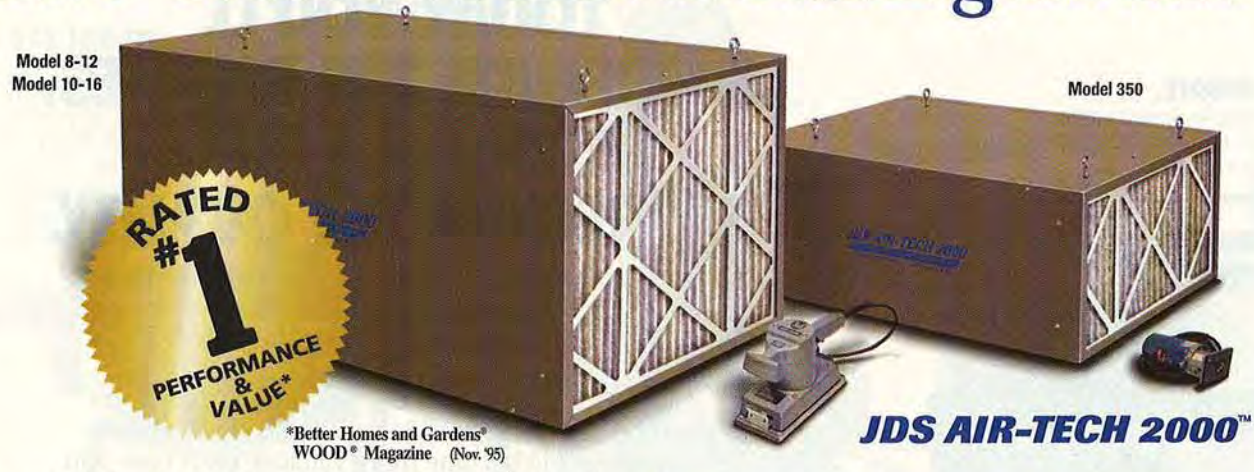

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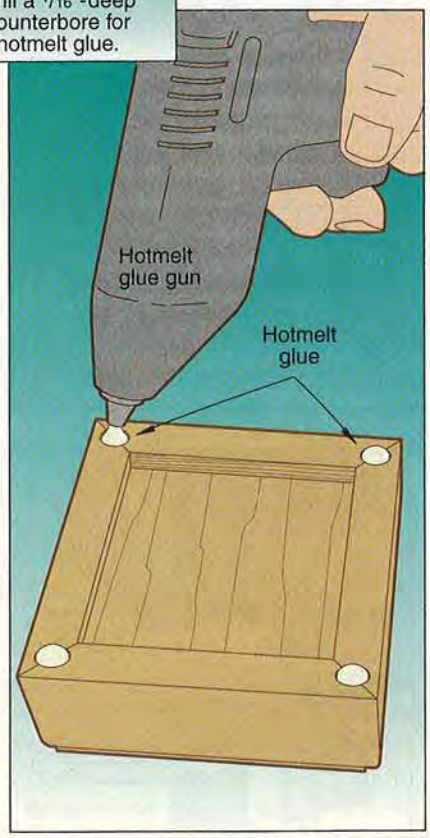
Hotmelt-glue feet stop project wobbles

Getting a flat-bottomed wood project to sit on a table or shelf without rocking can be difficult. If your projects need a footing, try this simple trick.

With a small Forstner bit, drill a 1/16"-deep hole in the corners of the base of the project. Then, place a dab of hotmelt glue in the holes. Fill the holes with enough glue so that it forms a slight dome above the surface of the wood. When the glue has gelled (but not hardened), turn the project over, and set it on a flat, level surface.

Put a spirit level on top of the project, and gently tap the corners to level it. After the glue hardens, these nonskid "feet" will help keep the project from rocking or sliding on tables and shelves.

—Roy Locke, Panama City, Fla.



Continued on page 26

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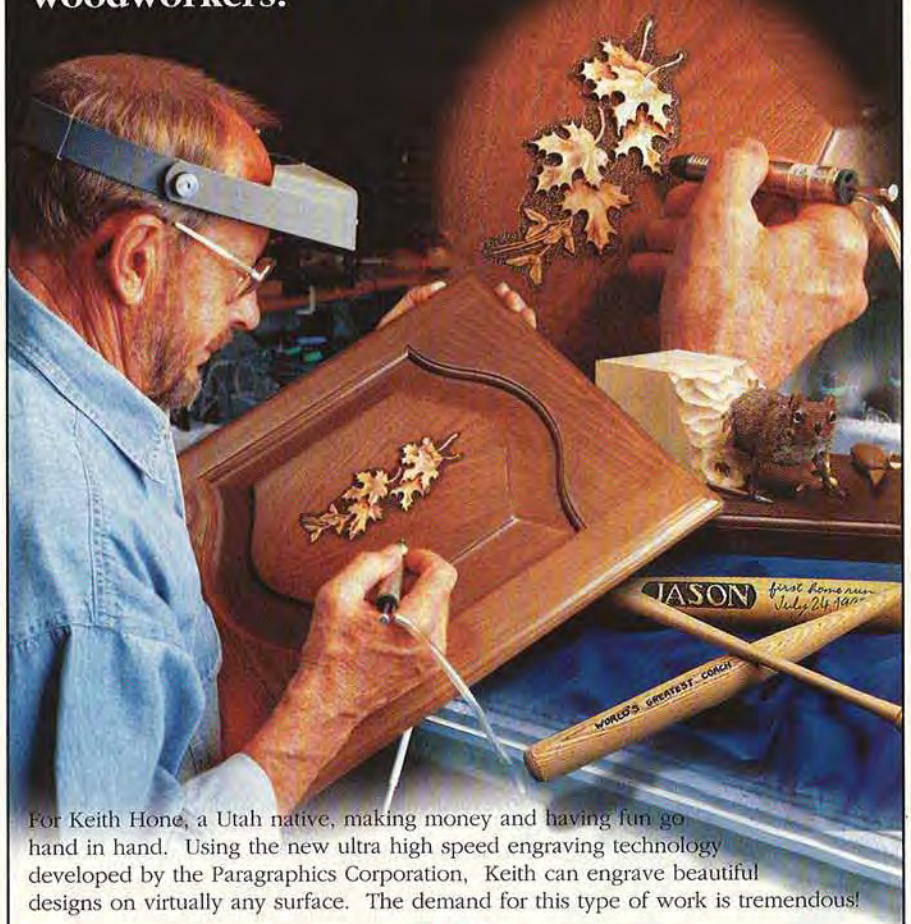

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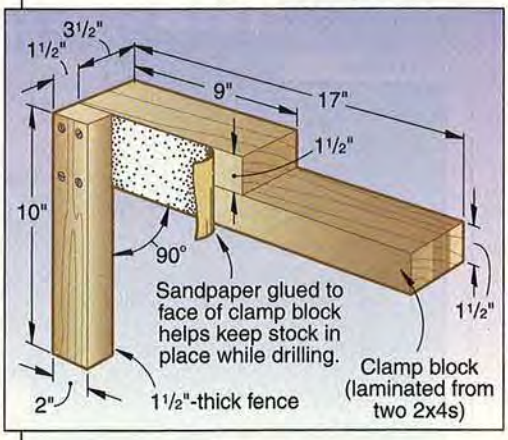
Continued from page 25

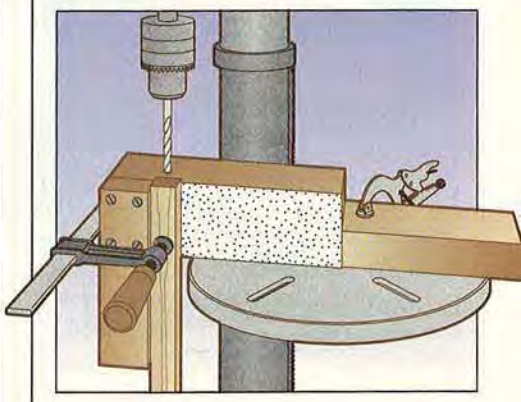
Bore vertical holes with scrap stock jig

Here's a quick-fix jig that will come in handy the next time you need to bore a vertical hole in the end of a long workpiece. To make the clamp block, laminate two 2×4s, one 9" long and the other 17" long, as shown in the drawing *below*. Then, joint the sides that face the workpiece and the drill-press table to achieve a perfect 90° angle.

Next, joint the edges and faces of the 1½×2×10" fence to perfect 90° angles. Use a framing square to align the two pieces at 90°. Then, fasten the fence to the clamp block with glue and four #8×2½" flathead wood screws, and adhere a piece of 150-grit sandpaper to the clamp block as shown. Now, clamp the jig to the drill-press table, clamp the workpiece to the jig, and you're ready to bore your hole.

—E. C. Peters, Brighton, Ont.

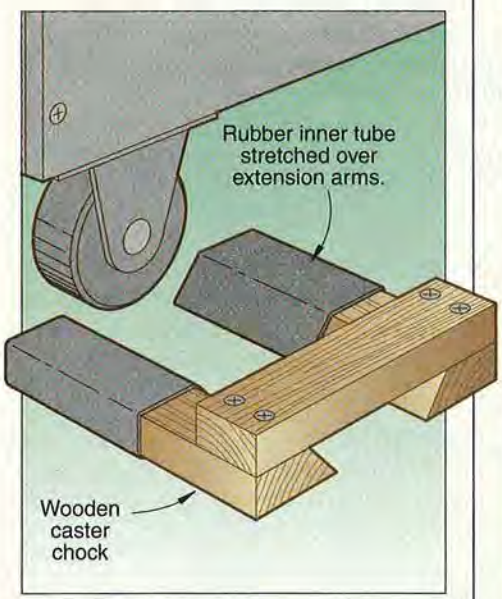




Old inner tube halts caster chock slipping

If you discover that the chocks you built to secure the wheels on your mobile tools are creeping around, here's a way to stop them dead in their tracks. Take two 2" sections of an old inner tube and stretch them over the extension arms on the chocks. The rubber gives the chock enough grip to stop it from slipping even on smooth floors.

—James Shawl, DeKalb, Ill.



A FEW MORE TIPS FROM OUR WOODWORKING PROS

- Sometimes a narrow skew chisel comes in handy on a turning project. If you don't have one, substitute your parting tool, as shown in the photo on *page 52*.
- Find out how clockmaker Ed Stone makes invisible seams in veneer. See "Time Marches On," *page 43*.
- Rout strong drawer joints using a drawer lock bit. See the Routing the Drawer Joints detail drawing on the "Down-home Sideboard," *page 57*.

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Q: We are considering a fiberglass entry door for our home. Can it be stained to look like wood?

D. Engstrom, Duluth, MN

A: Yes, an excellent wood-like appearance can be achieved if the proper materials are used and the correct application procedures are followed. We recommend Wood•Kote Jel'd Stain™ because it contains far more pigment than conventional stains. To begin, lay the door flat and clean any dirt or residue from the surface. Stain the door in the following order: panels, stiles, rails and finally, the edges. Apply stain with a cloth in circular motions, starting in the center and moving out. Next, gently wipe the stain with a clean cloth in the direction of the grain and work any excess out with a dry bristle brush. Allow the stain to dry for two hours, then apply at least three coats of Wood•Kote Flagship® UV polyurethane to all sides and edges of the door for protection.

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Circle No. 83

Whether your woodworker's license reads "Beginner," "Intermediate," or "Advanced," you're bound to have a few questions about your favorite hobby. We can help by consulting our staff and outside experts. Send your questions to Ask *WOOD*®, *Better Homes and Gardens*® *WOOD* Magazine, 1912 Grand Ave., Des Moines, IA 50309-3379. You can contact us via computer at these online addresses:
***CompuServe*: 74404,3516**
***Internet*: 74404.3516@compuserve.com**

Looking for a source of lathe accessories

I am in need of a three-jaw chuck for my Delta lathe, and have not found a supplier in my magazines. Can you help me locate one?

—Daniel Theiss, Salem, Ohio

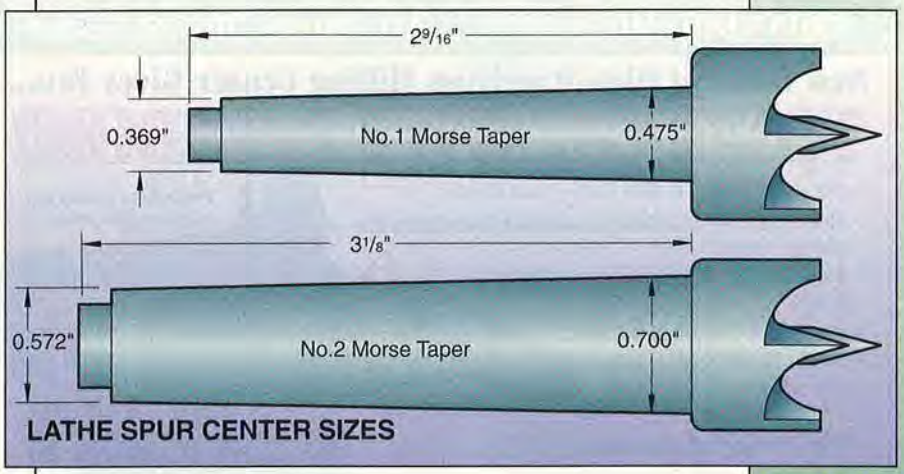
Dan, we found lathe chucks and other lathe accessories in the catalogs of several of our advertisers. Because Delta uses a relatively common spindle thread (1" × 8 threads per inch), there's a wide selection of chucks available for your machine. Including a chuck made by Delta: Part No. 46-590. Call 800/438-2486 for a Delta dealer near you.

For you readers who own another brand of lathe, don't give up hope. There's also a good selection of aftermarket accessories available for you—particularly if your lathe uses the Shopsmith-style ⅝" plain-shaft spindle, or the ¾" × 16 tpi spindle that's used on Sears Craftsman lathes.

While we're on the subject of lathe parts, let's also take a look at the Morse taper joint used for spindle accessories. You'll find that most spur centers, tailstock centers, and tailstock-mounted chucks use this self-centering and self-holding joint.

These tapers come as either No. 1 or No. 2. Both taper approximately ⅝" per foot, but the No. 2 taper is thicker and slightly longer. You'll find the #1 Morse taper used on Sears Craftsman lathes, and the #2 Morse taper used on the Delta and similar lathes. See the drawing below left for the dimensions of these tapers. (Please note that Shopsmith lathes use spur centers and accessories that have a ⅝" socket to fit over the motor shaft.)

Here are the addresses and phone numbers of some companies that list chucks, tapered centers, and other goodies for your lathe in their catalogs:



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Craft Supplies USA
1287 E. 1120 S.
Provo, UT 84606
801/373-0919

Grizzly Imports
800/523-4777(East of the Mississippi)
800/541-5537(West of the Mississippi)

The best way to glue edges

What is the best procedure for preparing the edge of a board for gluing? Some of my friends swear by a sawn edge for a glue joint, and others use an abrasive to prepare the edges for gluing. Can you provide some guidance on this subject?

—Dale Swann, Schenectady, N.Y.

Yes we can, Dale. We prepare our boards for edge-gluing with a jointer. This gives us two mating glue surfaces with little space between them, resulting in a thin glue line.

Woodworking glues bond best when mating surfaces are in tight contact. So, sawn or sanded surfaces probably will make for a weaker bond than edges that have been properly jointed.

Continued on page 30

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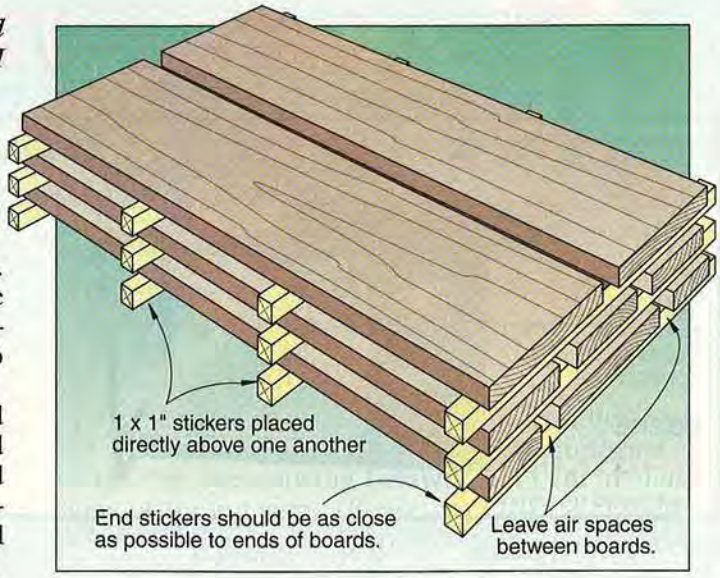
Continued from page 28

Rules to dry wood by

I have tried several times to cut and dry wild grape vines, cedar, oak, and other woods. It splits! I have oiled or painted the ends and de-barked the wood, but it still splits! Any suggestions?

—Raymond Russell, Saint Simon Island, Ga.


1 x 1" stickers placed directly above one another
End stickers should be as close as possible to ends of boards.
Leave air spaces between boards.

We can offer several general rules to follow when air-drying woods:

1 Cut your logs into boards as soon as possible. Drying your wood as boards greatly reduces the occurrence of stress cracks commonly seen in drying logs. Paint the ends of the boards to help reduce cracking as the wood dries.

2 Stack the boards in layers of even width, and separate the layers with "stickers." These should be 1×1" rough-sawn pieces of a nonstaining wood such as basswood, soft maple, or pine. Place stickers near the ends of the boards to help control checking of the wood as it dries.

3 You'll want good air circulation in the stack of wood. We prefer a covered outdoor location for stacking and drying new-cut boards.

4 To dry round sections of the wild grape vines, as well as sections of logs, we suggest that you first seal the ends with paraffin or a commercial end-grain sealer. These work better than paint for sealing round sections of wood. They slow down the drying process and increase the chances of having usable wood when dry. You will have to determine the drying time for each species by trial and error.

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BN125	*New* 18GA. Brad Nailer Kit	$ 99.
FN200	*New* 16GA. Finish Nailer Kit	$165.
DA250	*New* 15GA. Angle Finish Nailer Kit	$249.

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1827	DW304K	Recip. Saw w/case, V/S	$139.
1550	DW610	1 1/2 HP Router	$149.
1552	DW615	1 1/4 HP V/S Plunge Router	$165.
1555	DW625	3 HP V/S Plunge Router	$274.
1425	DW675K	3 1/8" Planer w/case	$159.
1264	DW682K	Biscuit Joiner Kit	$219.
1085	DW962K-2	9.6V Cordless V/S Kit, 2-batt.	$179.
1088	DW972K-2	12V Cordless V/S Kit, 2-batt.	$189.
1091	DW991K	14.4V Cordless, 1-batt.	$199.
1548	DW673K	Trim Kit w/case	$199.

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A reader who's hunting for a snipe cure

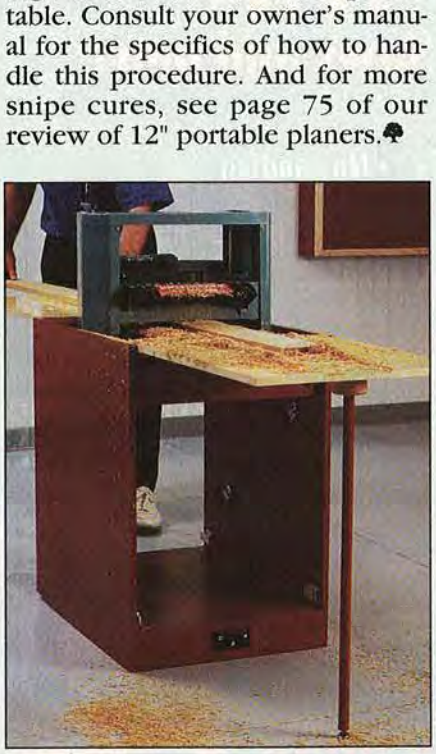
What can I do to prevent my surface planer from "sniping" the ends of the boards I plane?

—T. J. Cullen, Manahawkin, N.J.

Sniping (a cross-grain hollowing) may happen at either end of a board being fed into a planer. When only one feed roller controls the board, the end of the board can move up into the cutterhead. Unfortunately, you'll find it hard to totally eliminate snipe as the frames of most portable planers are not rigid enough to prevent some flex while planing. However, you can reduce snipe by supporting the board all the way through the planer.

To do this, you'll need to add an extension to your planer table. We designed our portable planer center, shown above (January 1995 issue) and an auxiliary planer bed ("10 Quick-and-Easy Scrapwood Jigs," December 1995 issue) for this purpose.

On many of these planers you can also lessen sniping by adjusting the bed rollers in the planer table. Consult your owner's manual for the specifics of how to handle this procedure. And for more snipe cures, see page 75 of our review of 12" portable planers.



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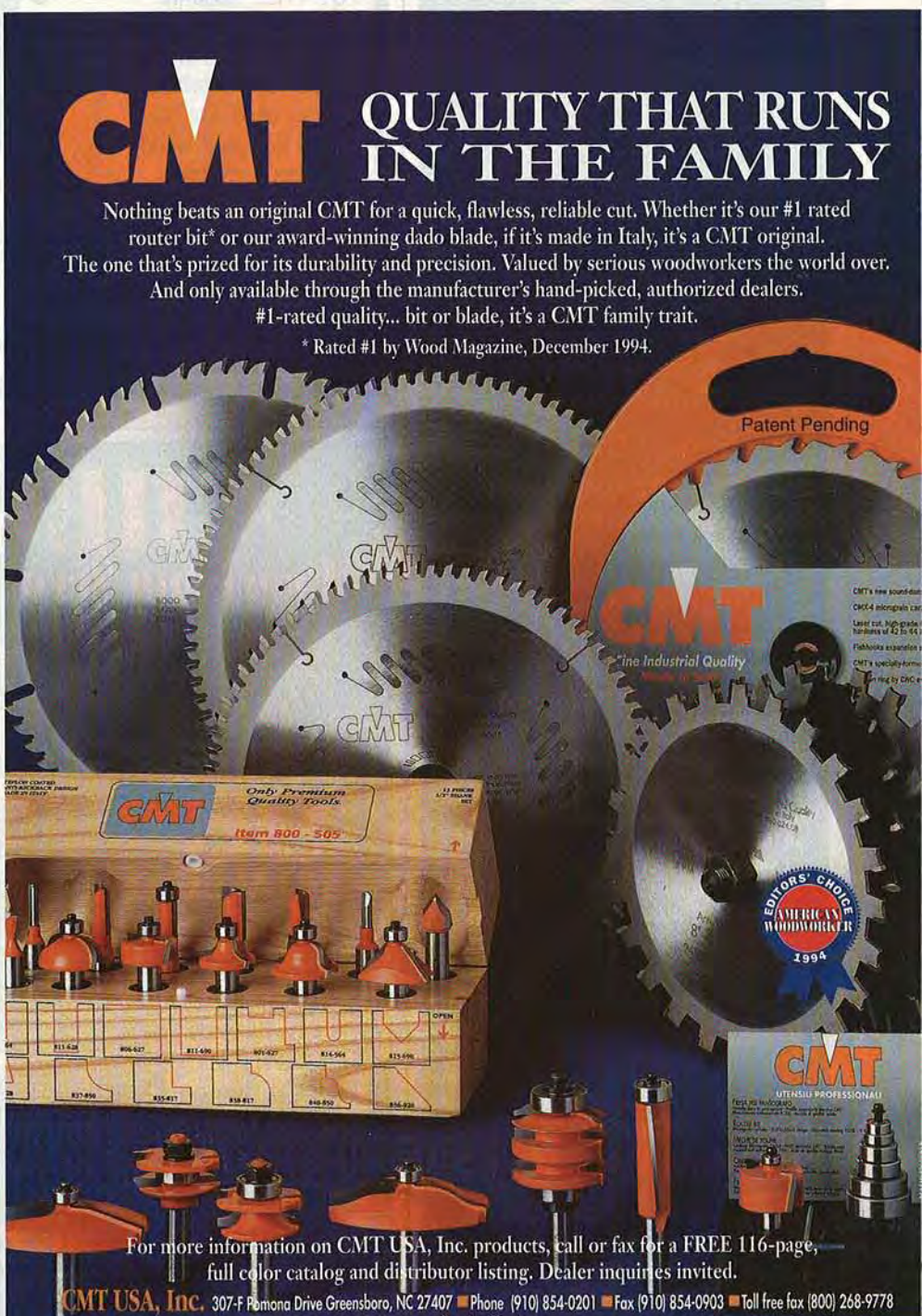

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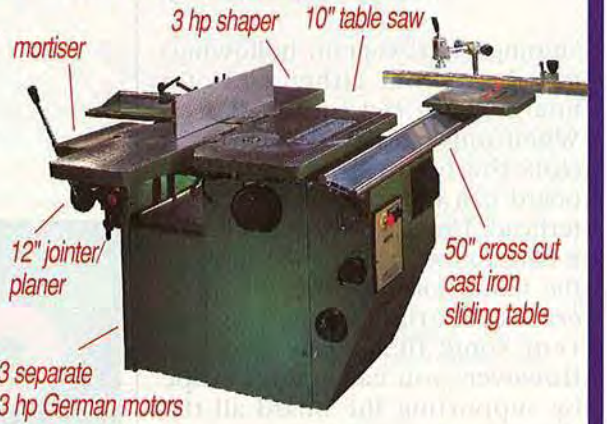

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WESTERN LARCH

The conifer that changes with the seasons

From the northern reaches of Alberta across the continent to Nova Scotia and Maine, you'll find a tree that most everyone calls tamarack. As a conifer (softwood), it's memorable because in the fall, it turns gold, then drops its needles as do hardwood trees. A larger version grows in the mountains of Idaho, Montana, and the Pacific Northwest, but there it's commonly named western larch. Different in name as well as size, the tamarack and the western larch may be North America's most unappreciated species.

Knowing woodsmen of the far north harvested tamarack for long-lasting boat parts and pier pilings. Yet, the lumbermen generally passed it by in favor of white pine.

In the West, lodgepole and ponderosa pine, along with Douglas fir, drew the loggers' attention because they are prone to grow in thick stands. The occasional lonely western larch, although large, was a heavyweight and hard to move. Today, the forest products industry makes greater utilization of the forest. That's especially true in the West, where the larch has earned a distinctive place.

Wood identification

The tree you may know as tamarack, hackmatack, or eastern larch is the species *Larix laricina*. It grows from the Yukon east to Newfoundland and south to Wisconsin and New York.

The tamarack shares all the physical characteristics, except great size, of its commercially important cousin, western larch (*Larix occidentalis*), which is the focus here. Western larch primarily grows in the mountains.

In prime growing conditions, the western larch can attain a 200' height and a 7' diameter. Such a tree might have 100' of branchless trunk.

The western larch has fine, feathery, flexible needles that occur in clusters on the branches. Cones are about 1½" long. Each autumn, the needles turn yellow, then fall. Come spring, new needles appear carrying a bright shade of green. Larch's distinctive bark helps in identification, too. A dull cinnamon brown color, the bark grows in many small, irregularly rounded plates, sometimes nearly 6" thick.

Natural range

The wood of the larch ranks as one of the strongest among softwoods. And at 39 pounds per cubic foot air-dry, it's as heavy as many hardwoods. The hard, reddish brown wood has straight, uniform grain with tough fibers and a fine texture. Its extractives and resin make it durable.

Uses in woodworking

From a prime material for posts, railroad ties, and mining timber, larch has risen to find its way into boats, interior trim, cabinets, and furniture. It works well for outdoor projects.

Availability

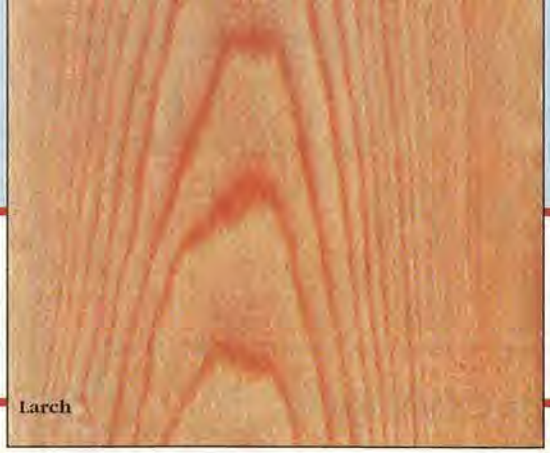
Larch from the West is regularly marketed as lumber throughout the U.S., but it may be mixed with Douglas fir. For furniture and cabinets, you'll want boards graded B & BTR., C SELECT, or D SELECT. Expect to pay about $2.50 per board foot. Tamarack lumber may be locally available at sawmills or from dealers specializing in boatbuilding stock.

Continued

PERFORMANCE PROFILE

western larch

(Larix occidentalis)



Larch

Photograph:
Western Wood Products Assn.

The industry looks on larch as a resinous wood. However, kiln-dried appearance grades will have less resin than construction grades. Remember, though, that western mills don't kiln-dry softwoods to the 8 percent moisture content you normally associate with kiln-dried hardwood boards. The larch you buy may have as much as 12-15 percent moisture content. And that's perfectly fine, if you let the wood acclimate in your home for a week or so to stabilize it before you start building. But prior to working your larch, read the following tips.

Machining methods

Larch is a softwood, yet it is about the hardest of all softwoods. That characteristic means you can successfully work it with hand or power tools, if you keep all tool cutting edges sharp.

- Like many other softwoods, the resin or pitch in larch will build up on your saw blade. To avoid the burning and blade wander that accompany this buildup, always use a Teflon-coated blade or every so often stop and clean the blade with steel wool dampened with acetone.
- Larch's straight grain, plus its hardness, gives it a tendency to splinter. A backing board reduces this when you rout cross-grain.
- The hardness of larch requires drilling pilot holes for all nails and screws before assembly.
- Except for the very highest appearance grades, larch boards will contain small, tight knots. These tend to blunt cutting edges, so use only carbide-tipped cutters and blades. You'll also want to seal the knots with shellac before applying a clear finish to prevent bleed-through.
- The resin in larch reacts unfavorably with paint, unless you first seal the wood with diluted shellac or conditioner. Stain and clear finishes work well.

Carving comments

- The hardness of larch varies considerably from earlywood to latewood. This means that the wood won't take detail without chipping or splintering.
- For sculptural carvings, pin knots and the cathedral figure from the growth rings add great visual interest.

Turning tips

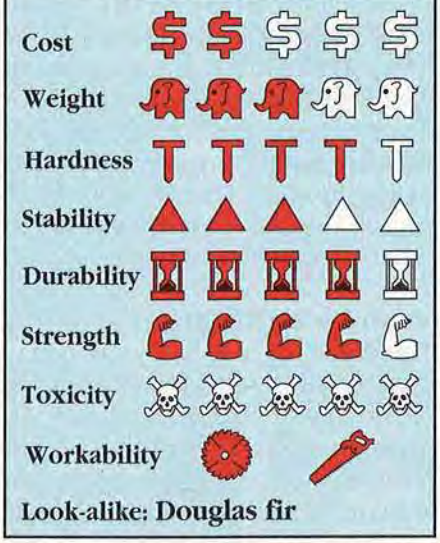
- Larch sawn into thick stock blanks could contain resin pockets. If the pitch is still runny, droplets of it will appear on the surface of freshly turned wood. Let them harden before scraping off, then finish the wood.

SHOP-TESTED TECHNIQUES THAT ALWAYS WORK

Any exceptions—and special tips pertaining to this issue's featured wood species—appear under other headings elsewhere on this page.

- For more stability in use, always try to work wood with a maximum moisture content of 8-9 percent.
- Feed straight-grained wood into planer knives at a 90° angle. To avoid tearing, feed wood with figured or twisted grain at a slight angle (about 15° will do), and take shallow cuts of no more than 1/32".
- For clean cuts, rip with a rip-profile blade having 24-32 teeth. Smooth crosscutting requires at least a 40-tooth blade.
- Avoid using twist drills. They tend to wander in the wood and cause breakout. Use brad-point bits and a backing board under the workpiece to reduce tearout.
- Drill pilot holes for screws.
- Rout with sharp, preferably carbide-tipped, bits and take shallow passes to avoid burning.
- Carving softwoods means fairly steep gouge bevels—20° or more—and deeper cuts.

LARCH AT A GLANCE



Look-alike: Douglas fir

Compiled with woodworkers Joe Rhodes and Tom Elkan Illustrations: Steve Schindler

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WALNUT THE TREE THAT MARCHED WITH MILITARY HISTORY

Walnut's association with firearms goes back to the 17th century, when French musketeers selected a European species of it for the stocks on their muzzleloaders. Light, yet strong, the wood was easily worked and finished. But most important of all, walnut withstood the shock of recoil and remained stable under the worst of conditions, explains Bob Chenoweth in *Black Walnut* (Sagamore Publishing Co., Champaign, Illinois, 1995. Call 800/327-5557).

From that time on walnut formed the stocks of military weapons. Black walnut (*Juglans nigra*) was on the black-powder firearms carried by patriots in the American Revolution and by North and South in the Civil War. As the sturdy grip on Springfield rifles, the wood survived World War I. GIs carried walnut-stocked M-1s through World War II and Korea, adding to the wood's battlefield heritage.

Later, in Vietnam's early stages, M-14s and M-16s still sported walnut. Then along came the M16-A1, and with it a composition stock of hard plastic. Perhaps walnut was too scarce, too expensive, or maybe not tough enough for the modern military. Whatever the reason, walnut's encounters with conflict were over.

Today, a vestige of this history remains. The 3,000 cadets of the United States Military Academy at West Point, New York, proudly parade with their M-14s—still stocked with black walnut.

Although walnut was replaced in combat by plastic, the rifles of West Point cadets still sport the wood.

Illustration: Jim Stevenson

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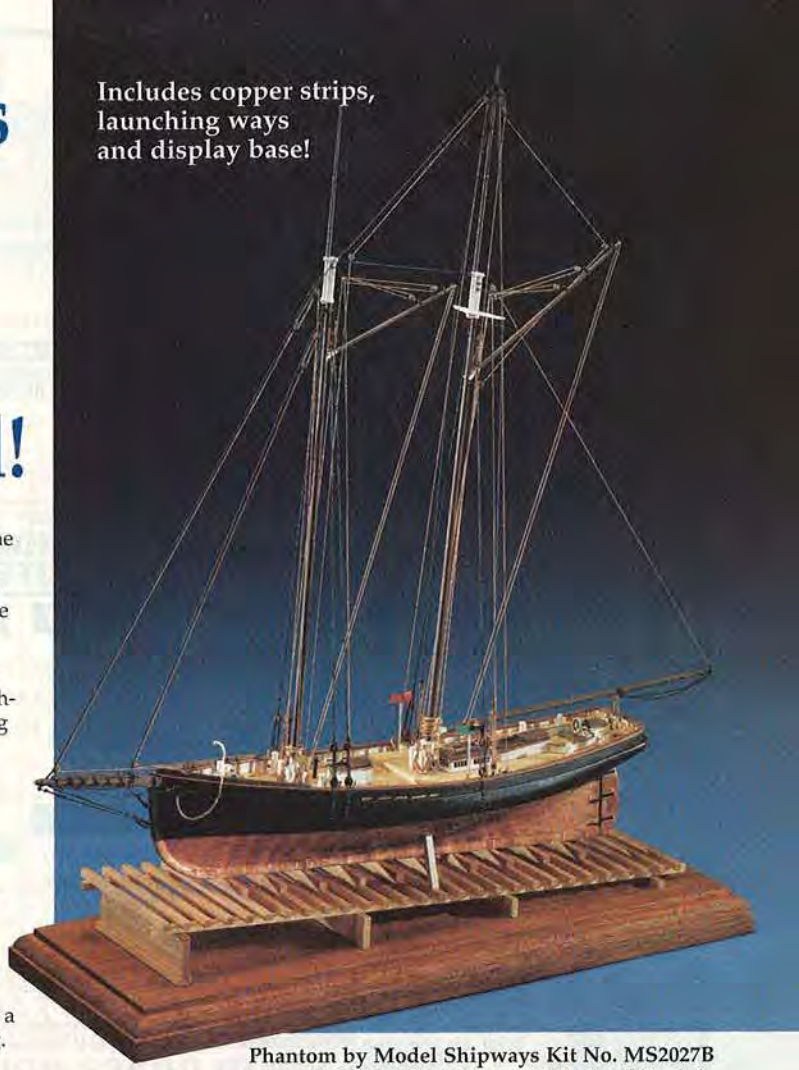

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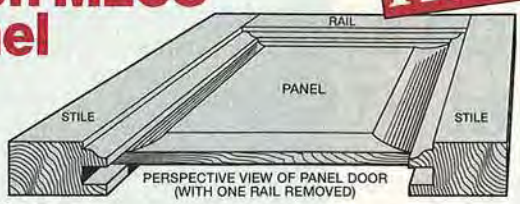

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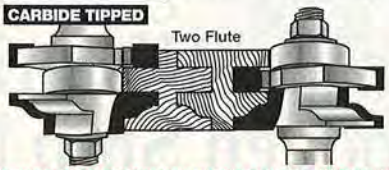

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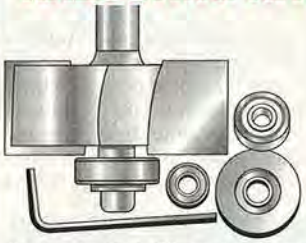

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Simon Willard patented the banjo clock in 1802. Its weight-driven movement in the long case enabled it to run for eight days. Ed's gilded "Bride's Banjo" sells for $3,000.

Time Marches On

In his Maryland workshop, Edward Stone replicates the clock craftsmanship of Early America.

Tick TOCK. Tick TOCK. To most of us these clock sounds are comforting ones. Not to Edward Stone. He much prefers an evenly pitched "tick tock, tick tock."

"The most practical way to adjust a brass, mechanical clock movement is by ear," says the 63-year-old clockmaker. "You have to listen and adjust it until the ticks equal the tocks in volume. Otherwise, you can rest assured that in a few hours the clock will stop. But when you get 'tick tock,' it will run for a century."

In fact, Ed, who is quite a historian, says that a lot of early Simon Willard movements are working as well today as they did in 1802. "Willard patented the movement and his timepiece which came to be called the banjo clock, in that year," Ed explains. "It was one of the first American departures from the tall-case clock, or what we call a grandfather clock. The brass mechanism was powered by a seven-pound weight that traveled up and down the case. This enabled it to run for eight days." Since Willard was still making these clocks well into his eighties, Ed figures he has 20 years to go.

Ed also notes that during the early 1800s, silent-running clocks like Willard's banjo were actually called timepieces. Only those that chimed, rang, or gonged to mark the passing of time were referred to as clocks. These timeless tidbits and many more emerge as Ed, speaking comfortably as he moves about his Bowie, Maryland, shop, unveils a fascinating part of American history. And it's one period that he has come to know quite well.

In his study, Edward Stone checks out a gilded finial for a clock case. On the desk is a double-decker and shelved behind him are three more types of his handmade pillar-and-scroll clocks. All have reverse-painted door glasses.

Continued

In their day, these timepieces (called coffin clocks today) were popular for banks, schools, and churches where their simple style looked more appropriate than the fancier banjos, which shared the same movement.

Time Marches On

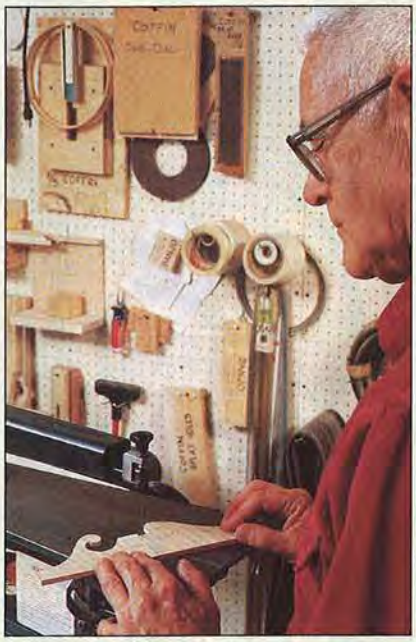
Getting a focus on clocks

"I build clocks from what I call America's Golden Age of clockmaking," says the crewcut craftsman. "That was from about 1800 to 1840, and includes the styles invented and made by Simon Willard, Seth Thomas, Chauncey Jerome, Elnathan Taber, and of course, Eli Terry."

Ed studied the works of these inventors and clockmakers following his retirement from the U.S. Forest Service, where he had put in 27 distinguished years as a landscape architect. A hobby woodworker since high school, he had tooled up to build furniture and cabinets when he no longer had to show up at the office. But a course on Early American decoration at Washington, D.C.'s Smithsonian Institution altered his focus.

"The course was in bronze-powder stenciling, one way by which clocks, Hitchcock chairs, and other items were decorated," recalls Ed. "The teacher found out that I was a woodworker, and asked me if I could make boxes. She and other members of a historical society needed boxes of an Early American type to stencil. So, I went to their museum and made measurements and sketches of the kinds of boxes they wanted, then began making them. Eventually I began building some clocks for them to decorate, too. Before long, I had completely drifted into clockmaking and was hiring them to decorate my clocks. And I've been a clockmaker ever since."

That happened eight years ago. Yet Ed's then-new fascination with clocks wasn't unlike what happened to a young America during his favorite historical period, when ingenuity and craftsmanship begot clocks.



Ed makes the scrollsawn splats (top trim pieces) for coffin clocks from ¼" curly maple or mahogany with a cross-grain inlaid plinth up the center.

Mass production in wood

Just as he might have woven a story around a campfire in his Forest Service years, Ed talks about clock history. "Before 1802 in the United States, mostly tall-case [grandfather] clocks were produced. And after 1840, clocks really went into mass production, with manufacturers using decals or printed decoration instead of handpainting. And it was about then, too, that rolled brass and stamping machines appeared in the U.S., so the cost of brass movements went down considerably. Wooden movements couldn't compete. The way I look at it, clockmaking was pretty much the first mass-production effort in this country. And it all began with Eli Terry.

"In 1793, he completed his apprenticeship as a clockmaker," Ed continues, "and set up shop making tall-case clocks with brass and the less-expensive wooden movements. We believe he later took the opportunity to

watch Eli Whitney make government-contract gun parts in Connecticut. Whitney was to figure out how to make the parts interchangeable and produce them in a factory. Before then, guns were made one at a time by a blacksmith or gunsmith, and no two were alike. No one had ever done before what Whitney was doing. Well, Terry figured he could make clocks that way, too."

Terry knew firsthand of customer reluctance to pay the higher cost of brass movements (even further inflated by British taxes), so he turned to New England's hardwood forests—cherry for gears, oak for front and back plates, etc.

"In 1807, Terry managed to finagle a contract with two brothers to make 4,000 wooden movements for tall-case clocks over three years," tells Ed. "Everyone in New England laughed because nobody had made that many in a whole lifetime! Terry ended up spending the first year rigging the machinery to run by waterpower. A young joiner by the name of Seth Thomas was hired to assist. In the second year they produced 1,000 movements, and the other 3,000 in the third year. Then, Eli took his money and retired."

Early American clockmakers liked to lay veneer for the clock door in a chevron pattern. For a perfect seam, Ed tapes a joint together from the veneer's face side, then glues the back side. Next, he lays it flat to dry. The green seamstress' trim board provides an unequaled mar-free cutting surface, he claims.

America first marks time

Apparently, though, Terry got bored in retirement. Around 1816, he invented the pillar-and-scroll shelf clock, and began producing them. Because he had mass production of the movements down pat, he could keep the price low, even while using hand-painted and gilded dials and glass tablets (door panels). At $15 a clock, the average family could now own one.

Ed laughs at the irony of this historic achievement. "Of course, in those days, clocks were relatively unnecessary," he says. "Most people got up with the sun and worked until the sun went down, then ate and went to bed. Nobody worried much about it; the clock was pretty much just a status symbol. Due to Terry's factory system to mass-produce clocks, however, it suddenly became necessary for people to be somewhere at a certain time—to start their jobs in the factory, for instance."

The smaller, shelf-style clocks were popular with peddlers, too, who hauled and sold them in the western frontier. "Travelers' journals from those days often mention bare-bones frontier homes with only a table, one chair, and a Connecticut shelf clock," Ed points out. "They bought a clock to decorate their places.

"Peddlers also had a unique way of selling," he notes. "They'd tell the farmer and his wife that they would leave the clock with them for a month. If they liked it, they could pay for it when the peddler came back through. The folks would get used to the clock and not want to give it up!"

Ed lifts thin 23-karat gold leaf onto the sized trim piece with a squirrel's-hair gilder's tip, then burnishes it in place with a small paintbrush. "Gold paint will tarnish, real gold won't," says Ed.

The case for clocks

If you can find one today, an original Eli Terry pillar-and-scroll shelf clock in excellent condition might sell for several thousand dollars, according to Ed. A Willard banjo might carry a six-figure price tag. "But there are lots of counterfeit Simon Willard banjos," he says.

In comparison, Edward Stone's clocks seem quite reasonable. At $3,000, his extensively gilded "Bride's Banjo" (shown *page 39*) is the most expensive. A pillar-and-scroll clock with fretwork and figured wood tops out at $1,500. At the lower end, you can buy a simpler coffin clock (named such because of the case's resemblance to one) with a mahogany or curly maple case for around $550.

What will you have purchased? A finely crafted, fairly authentic reproduction of a period clock.

"Fairly" authentic? Ed explains. "I change a few of the ways in

Continued

This cross-banded banjo with a carved mahogany lower bracket and a reverse-glass painting of two War of 1812 frigates is a popular style and brings $1,150.

Time Marches On

which the originals were done because I want my clocks to last longer. For example, on old clocks the craftsmen joined the casework expertly. But then to make the back, they nailed on boards—like they were banging together an orange crate. To cover it up, they pasted on a large advertising label. It's called a 'papered back,' visible through the door. I paper the backs of all shelf clocks, too, but the advertisement is over ¼" Baltic birch."

From going over old clocks, Ed also discovered that veneer was used extensively. "On a clock door, they'd put 1/16" mahogany veneer over pine. To hold the glass in place, they'd just let the veneer lap over into the cutout."

Ed veneers, too, but with limits. He veneers the solid-mahogany doors of his shelf clocks (most of which are done in a chevron pattern, as shown *preceding page*), the apron across the bottom, and the filigree-sawn pediment at the top. Only solid mahogany or curly maple becomes casework: Tops are ½" stock, bottoms and sides ¾".

No wooden movements

The solid cherry-wood gears in the movements used by early New England clockmakers had their faults, notes Ed. Besides humidity, which could warp them, the gears would pop teeth. "Of course, it wasn't hard to cut another and insert it," he says. "But if five or six teeth in a row broke, the gear was probably done for."

Ed doesn't attempt to re-create wooden movements because most customers cannot easily obtain repairs for them. He relies on quality windup brass movements of German origin, American weight-driven movements, or Japanese-made quartz, battery-powered movements. All swing their pendulums and some count out the hour on a bell, gong, or chime rods. If the customer prefers the battery-powered, Ed makes and installs simulated winding stems and dial holes to preserve the original appearance.

"Unfortunately, quartz movements don't make tick-tock sounds as the originals did. And whoever designs quartz movements these days seems to know nothing about clocks," comments the clockmaker, "because you cannot have a pendulum swing too slowly. The more slowly they swing, the more majestic the clock looks. Yet, almost all quartz movements swing too fast, and that drives me crazy."

Ed mounts clock movements on a "subdial" made of either ¼" or ⅛" Baltic birch plywood. "I usually finish the case, fit the movement to the subdial, and then install the real dial that's

To bring out the figure in curly maple, Ed triple-stains with water-soluble aniline dye. Sanding with 320-grit between coats lightens the "flat" areas for more contrast.

handpainted and gilded on Masonite or metal," he explains. "Then, I put the glass in the door. On the banjos, the last thing that goes in are the reverse-painted glasses. I do some of them, but have most done by a Michigan artist for $200 and up, so they're a valuable element."

Accenting the wood

"Most people who see my maple coffin clocks [see *page 40*] call the case wood 'tiger' maple. We [woodworkers] know it as curly or fiddleback," says Ed. "Whatever it's called, my customers like it, so I've come up with a finishing technique to accentuate the figure."

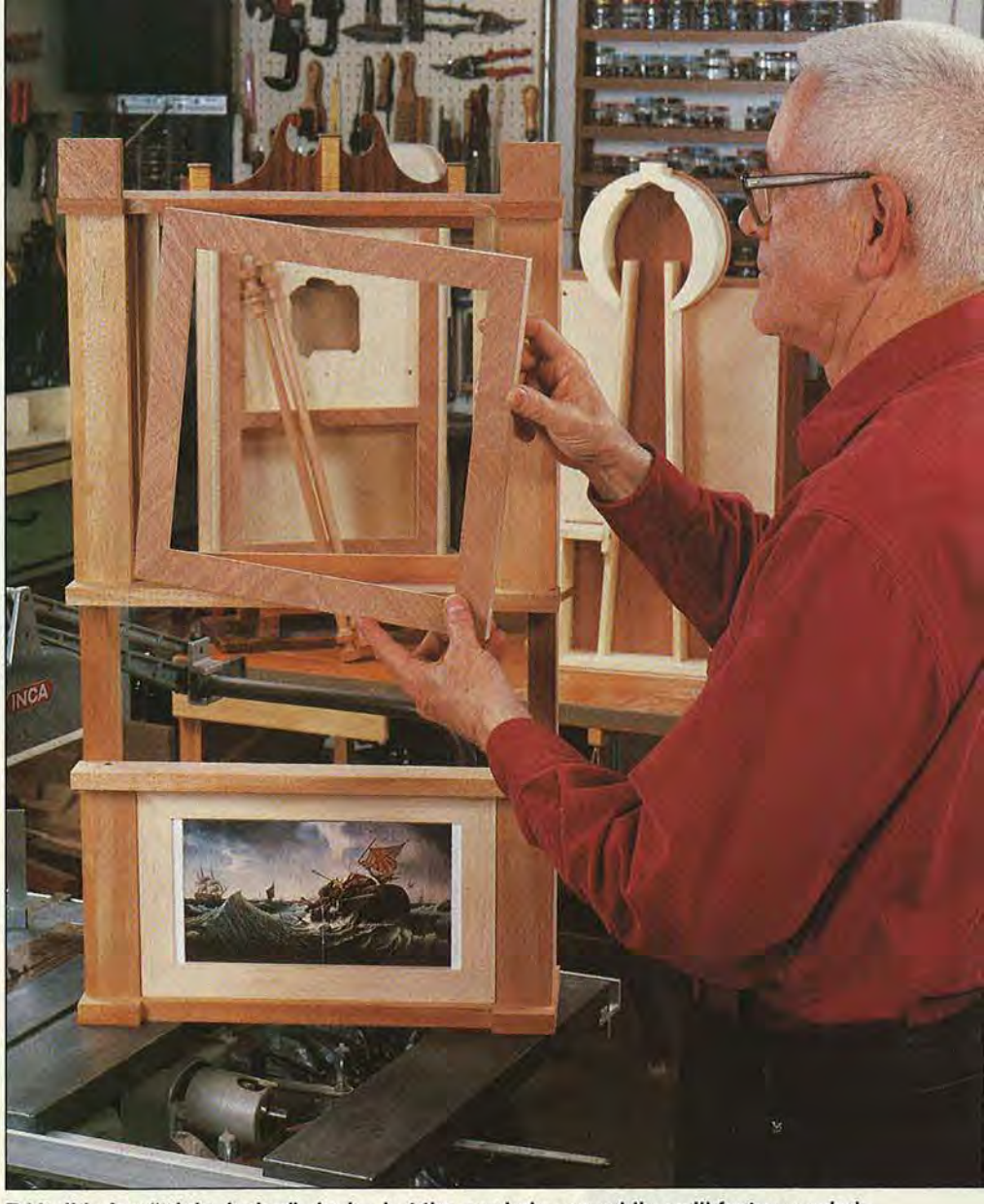
After the curly maple has been finish-sanded, Ed brushes on his specially blended mixture of water-soluble aniline dye (see photo *below left*). "That raises the grain," he says. "Then, when I go to take the fuzz off with 320-grit sandpaper, it takes the stain off the flats, but leaves it in the curls. I end up staining it three times, sanding after each coat. But because of the sanding, what I'm really getting is three coats on the curls and one on the flats. The staining and sanding accents the figure. And the dye colors the wood without fogging or obscuring it as oil stain can."

The accenting completed, Ed turns to a fairly flat finish that he likes on his coffin clocks. He wipes on several coats of polymerized tung oil, or sometimes Minwax antique oil, which works almost as well, he says. Pillar-and-scroll clocks, and the banjos, get a few coats of Bartley's gel varnish ("It dries so fast that it doesn't pick up any dust"). Over the varnish, Ed lays down paste wax, then buffs it.

The clockmaker admits that he's extremely fussy about his wood, from the selection to the finishing. He travels to a hardwood supplier in Pennsylvania to hand-pick his figured maple and mahogany stock, even buying cupped and twisted boards if they display the best curl. He knows that passes through his 10" Inca jointer/planer will flatten the figured boards.

"Other woodworkers I know—especially furnituremakers—say I'm crazy to pay $8 a board foot for curly maple. And I say, what does it matter for a clock that only has two or three board feet of wood in it? I make my period clocks for special people. I put my name on them. So the clocks therefore have to be special."

Written by Peter J. Stephano
Photographs: Steve Uzzell



Ed builds few "triple-decker" clocks, but the one he's assembling will feature a whaling theme, popular in New England during the period. Note the "subdial" visible behind the clock he's working on. It will support the movement.

Curious about clocks?

The National Association of Watch & Clock Collectors, Inc., maintains a museum and research library at its national headquarters. For information, write: National Association of Watch & Clock Collectors, Inc., 514 Poplar St., Columbia, PA 17512.

For a copy of Ed Stone's descriptive color clock brochure and price list, send $4 (U.S.) to:

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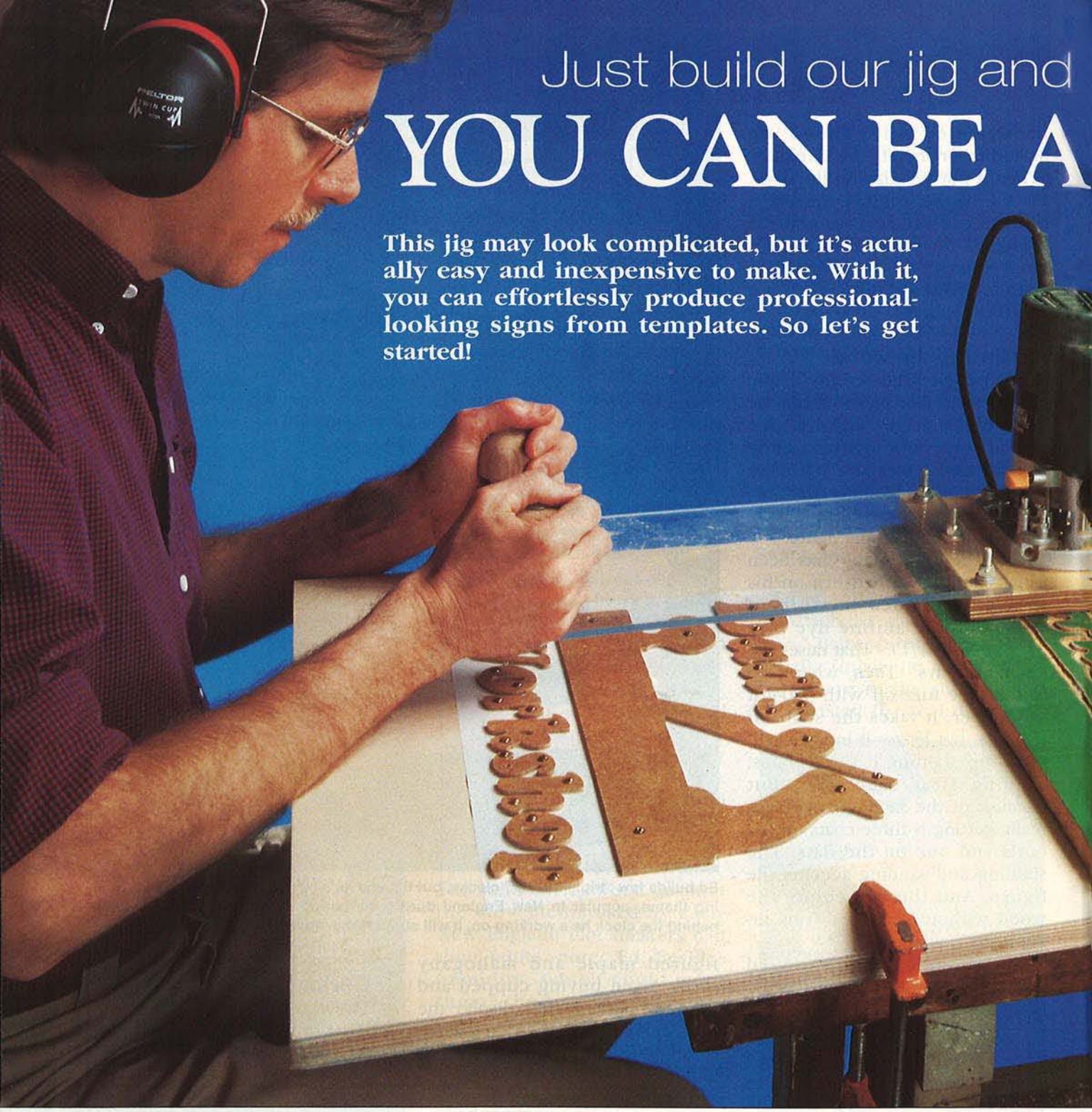

A well-made wooden sign catches the eye and captures the imagination. But ponder how it was made and you'll conjure up visions of mechanical arms, painstaking setups, and tedious template tracing and cutting. The bottom line for many of us woodworkers becomes, "I could probably do it, but is it really worth the trouble?" The answer is a resounding "Yes!"

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The photos at *right* show two types of template setups. The positive print template, *left*, creates a raised-image sign. The stencil-type template, *right*, cuts a negative print image into the face of the sign.

First, let's build the jig

STEP 1

Make the plates and arms

Start by cutting the three 8×8" plates (A, B, and C) out of ¾"-thick Baltic birch plywood. Stack the three plates together with double-faced tape between the plates to hold them securely. Drill ¼" holes through all three plates where shown in the Hole Pattern drawing on *page 46*.

Now, separate the plates, and cut the pivot plate (B) into a circle having an 4" radius. Then, drill the counterbores and countersinks where shown in the Exploded View drawing.

To complete the router plate (C), remove the plastic baseplate from your router and secure a ¼" straight bit with a ¼" shank into the collet. Place the plywood plate onto the base of the router,

Continued

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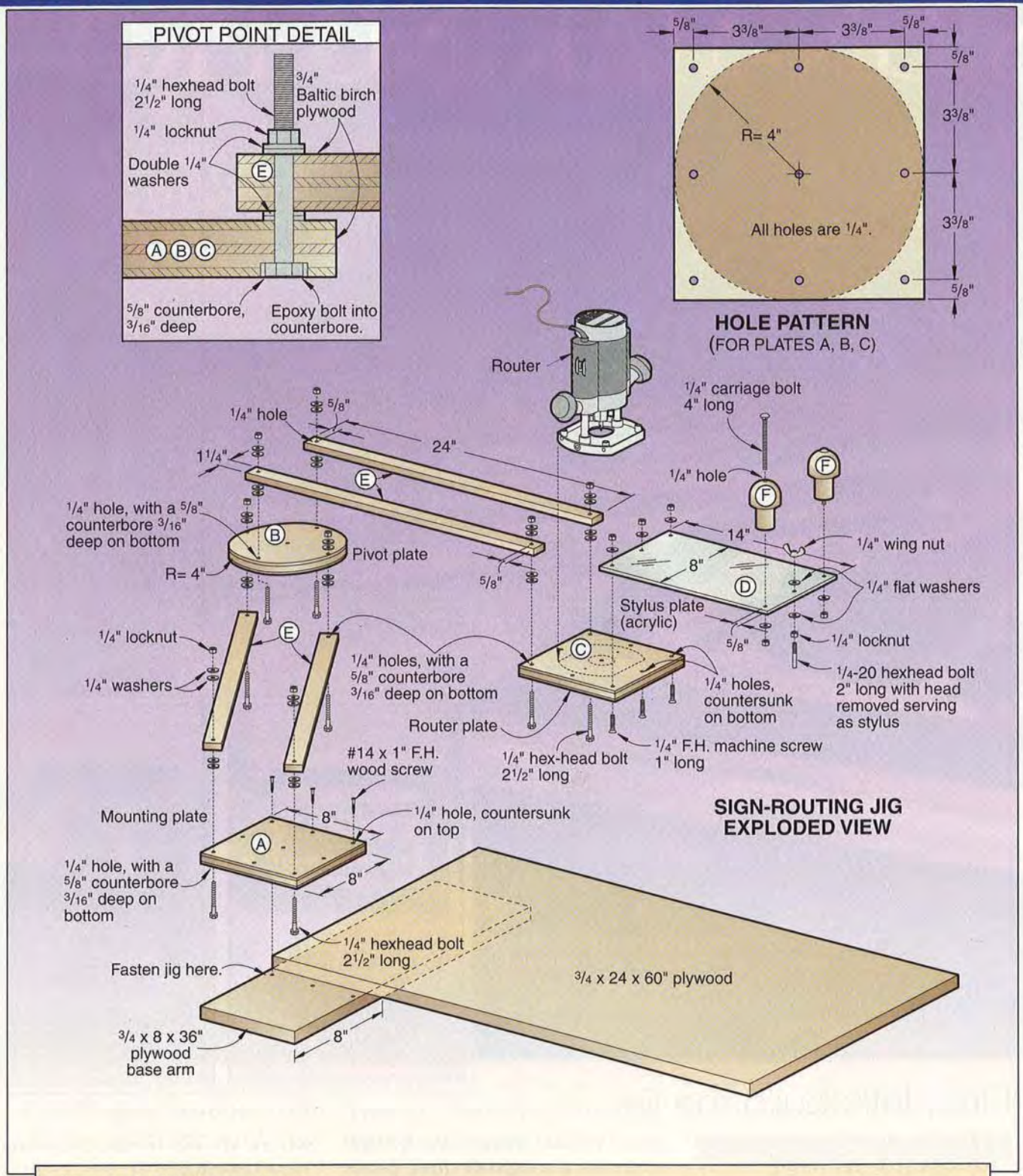


A word about routers

You can use any router you like with our sign-routing jig, but a lightweight router (1½ hp or less) works best. The less the router weighs, the less effort it takes to maneuver the jig. Also note that to mount your router to the plywood, you may need to buy an extra set of screws that are longer than the screws that hold the regular baseplate.

Bill of Materials					
Part	Finished Size			Material	Qty.
	T	W	L		
A	¾"	8"	8"	BPL	1
B	¾"	8" dia.		BPL	1
C	¾"	8"	8"	BPL	1
D	¼"	8"	14"	AC/PL	1
E	¾"	1¼"	24"	BPL	4
F	2" dia.		3½"	O	2

Materials Key: BPL–Baltic birch plywood, AC/PL–acrylic or polycarbonate, O–oak.

Supplies: 8 hexhead bolts ¼×2½", 2 hexhead bolts ¼×2" (with heads removed), 2 carriage bolts ¼×4", 3 flathead machine screws ¼×1", 14 locknuts ¼", 39 washers ¼", 3 #14×1" flathead wood screws, 1 wing nut ¼".

using the bit as a centering pin. Now, mark the locations of the router's mounting screw holes onto the plywood. Remove the plywood plate from the router, and drill holes at the marked locations that equal the diameter of the router's mounting screws. Countersink these holes so that the mounting screws will sit flush with the plate. Finally, rebore the opening for the bit to 1" for chip clearance.

To make the stylus plate (D), cut a piece of clear ¼" acrylic or polycarbonate to the dimensions shown. Drill ¼" holes along the front and rear edges, using the holes in the edge of plate A or C as a template.

Finally, cut out four identical pieces of ¾"-thick birch plywood to make the two pairs of arms (E). Stack these with double-faced tape as you did with the plates, and drill all the bolt holes. Counterbore where shown on the Exploded View drawing.

STEP 2

Shape a pair of hardwood handles

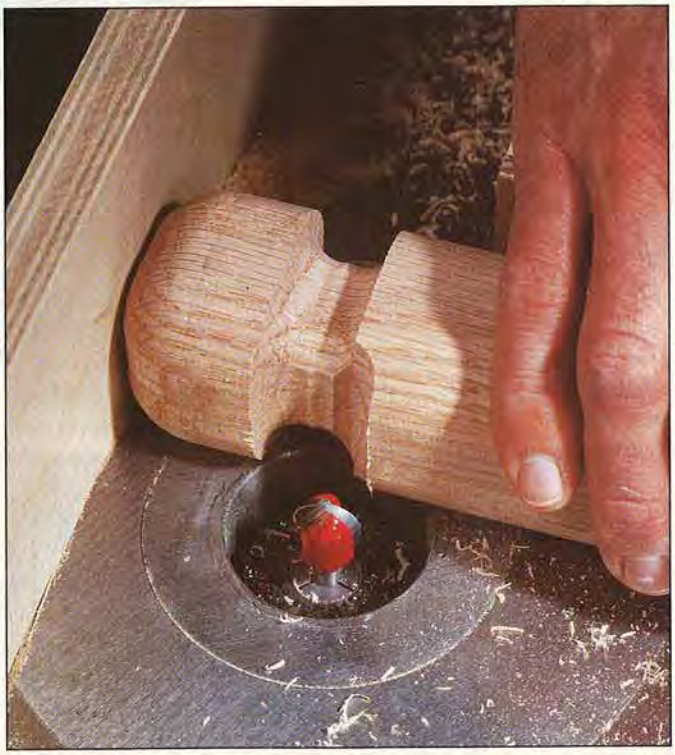
To make the two handles for the stylus plate, laminate enough hardwood stock (we used oak) to create a blank measuring 2×2×12". Strike diagonal lines from the corners on each end to find the center of the blank. Now, chuck a ¼" brad-point bit into your drill press, clamp the blank vertically in a handscrew clamp, and bore a hole 3⅝" deep. Bore into the opposite end the same way.

Next, tighten a ¾" round-over bit into your table-mounted router. Adjust the fence as needed, and round over each of the long edges. Then, place the blank against the table's miter gauge and perpendicular to the fence. Round over all four edges of each end of the blank as shown in the photo *below left.*

Switch to a ¾" round-nose bit raised ½" above the table. Adjust the fence 1½" from the bit, place the blank against the miter gauge with its end butted against the fence, and cut the knob-to-shaft taper. Adjust the fence away from the bit, and continue routing along the knob shafts as shown *below right* to a point 4" in from each blank end.

Continued

With the knob blank placed against the miter gauge and at a right angle to the router-table fence, round over the ends.



Using your miter gauge and a ¾" round-nose bit, rout the knob-to-shaft taper and the shaft with multiple passes.

Now, bandsaw across the blank 3½" from each end to create the two knobs. Insert a ¼" carriage bolt into one knob, and secure it with a washer and locknut. Chuck the protruding end of the bolt into the drill press and sand the handle smooth, starting with a coarse sandpaper and working up through finer grits. Repeat to finish shaping the second knob.

STEP 3

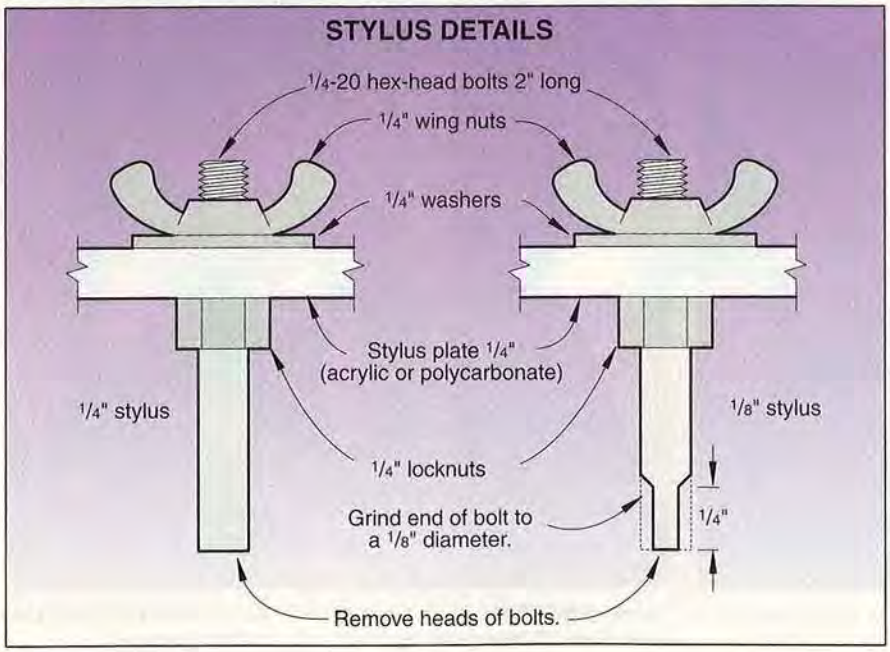
Make the stylus

The stylus traces the outline of the templates. It must equal the diameter of the router bit you are using. We found it was best to hog out the waste material with a ¼" straight bit, then rout the outline of the letters and templates with a ⅛" straight bit.

We made our ¼" stylus from a ¼-20×2" hex bolt with the head cut off. The threads of this bolt run up through the stylus plate where you secure it with a wing nut as shown in the Stylus Details drawing *below*.

To make the ⅛" stylus, take a ¼-20×2" hex bolt with the head removed, and chuck the threaded portion into a portable electric drill. With the drill running at a slow speed, switch on your bench grinder, and carefully touch the end of the bolt to the wheel on your bench grinder as shown *below*. (The drill gives you a safe, substantial handle, and the spinning bolt will be uniformly ground.) Continue grinding until you've reduced the diameter of the lower ¼" of the shaft of the bolt to ⅛".

Grind the end of a ¼-20x2" hex bolt to make the ⅛" stylus.



STEP 4

Assemble the jig

Assemble the jig as shown in the Sign-Routing Jig Exploded View drawing. Next, epoxy the bolt heads into the counterbored holes in the plates. When the epoxy dries, tighten the locknuts so that the arms fit snugly against the plates, but move without binding.

Next, screw a ¾×8×36" plywood base arm to the underside of a 2×4' sheet of ¾" plywood, and clamp this assembly to a small benchtop. Screw the mounting plate (A) to the base arm as shown in the Sign-Routing Jig Exploded View drawing.

Put a ¼" straight bit in your router and mount the router to the router plate (C), but keep the tip of the bit above the bottom of the plate for now. Finally, secure the ¼" stylus into the stylus plate.

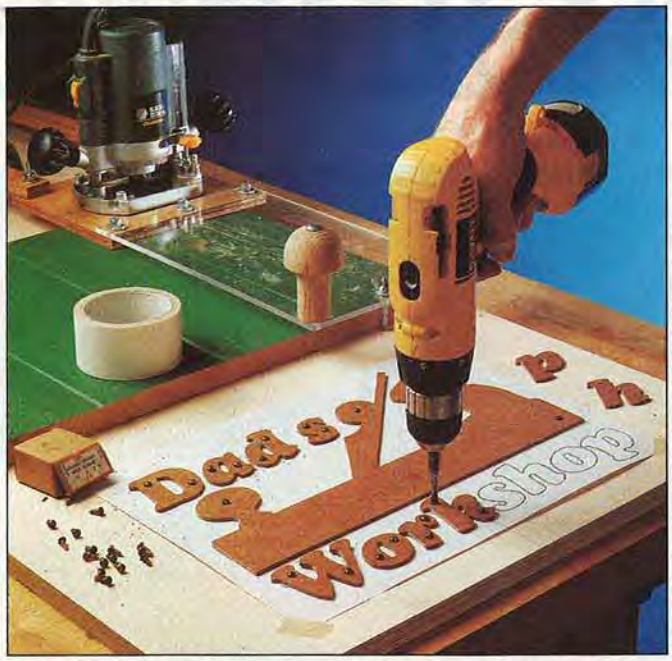
STEP 5

Scrollsaw and install your sign template

Make two copies of the paper pattern for the letters and design from the *WOOD PATTERNS®* in the center of this magazine. Tape one copy to the lower edge of the plywood (the edge closest to the stylus), centering it. (Set the other copy aside for now.) Then, check to make sure the stylus will reach around all the letters and shapes in the sign. If not, reposition the paper pattern closer to the mounting plate, and check the stylus reach again.

With spray adhesive, attach the other copy of your sign to a piece of ⅛" tempered hardboard that is smooth on both sides. Then, cut out the letters and pattern shapes with your scrollsaw.

Now, drill pilot holes in the letters and pattern for the mounting screws. We drilled ⅛" pilot holes for #6×½" roundhead screws. The location of the holes is not criti-



Position the design and letter templates onto the paper pattern on the plywood and secure them in place with roundhead wood screws.

Carefully lower the router bit onto the workpiece while positioning the stylus in the waste area of your template. Arch the stylus plate to engage the stylus before the bit touches down.

cal, just put them as far apart as possible to secure the pieces.

Place the template letters on their outlines on the paper pattern one at a time. Drill pilot holes into the plywood, and drive in the screws to secure the letters as shown *above left*. You can attach parts too small to accept a screw (such as apostrophes and commas) with double-faced tape.

Now, let's make a sign

At last, you're nearly ready to rout. But first, you'll need to position the wood for the sign. Mark the centerline of your paper pattern and the centerline of your sign material. Center the sign material on the paper pattern, and move it forward 16"—the distance from the stylus to the router bit. To secure the sign material, drive four brads or finish nails into the corners of the wood. Position these brads or nails in a waste area where you won't hit them with the router bit.

Now, lower the ¼" router bit to a depth of no more than ¼". Place the router plate on the front edge of the sign material where the bit can spin freely without touching the workpiece.

Turn on the router and grab the handles on the stylus plate. Lift up on the handles until the router is clear of the sign material. Slowly lower the stylus plate so that the stylus lands in a waste area of the pattern. But be sure to flex the stylus plate by pulling back on the handles as shown *above right*. This enables the stylus to touch the template before the router bit touches wood. Then relax the pressure on the handles to lower the bit into the wood and start routing. Rout the outside of the letters and patterns in a counterclockwise direction and the inside letters or shapes clockwise. Once you've removed most of the material, switch to your ⅛" straight bit and matching stylus and complete the fine detail work, routing in the same directions as before.

Ideas for templates: They're everywhere

In the *WOOD PATTERNS* section in the center of the magazine, we've provided a template for the type style we used to rout the signs in this article. But you're certainly not limited to just this style, or this sign. With our jig you can use any pattern, design, or type style that you can cut on a scrollsaw and maneuver a ⅛" stylus around. For your own patterns and letters, check out an art-supply store. There you will find clip-art books loaded with line art ranging from flowers to holiday themes, and most everything else in between. You'll also find a wide array of alphabet patterns which can be enlarged on a copier to obtain the size of type you need.

Project design: Einar Olsen Technical consultant: Jan Hale Svec Illustrations: Roxanne LeMoine Photographs: Bill Hopkins Jr., John Hetherington

A clever turning for sewing and showing

SEWING CIRCLE

If, like us, you're more adept at turning wood than sewing on buttons, this enjoyable project offers a practical advantage. We suspect that if you turn one of these enchanting sewing kits and present it to someone who sews, you may never have to worry about putting your buttons back on again.

A century and more ago, seamstresses treasured fancy sewing kits like this, though not for everyday use. Worn on a neck ribbon, much like a locket, such a kit would more likely be saved to be shown and admired on some special occasion, such as a sewing social. And if a suitor or spouse had turned the nesting containers on a treadle lathe, that made the set even more enviable.

To turn one yourself, grip one end of a 1×1×7" piece of stock in your lathe chuck. Install a live center in the tailstock, and bring it up to support the free end. Round the stock to ⅞".

Project Prep

Stock: 1×1×7" walnut for body and thimble, ⅜×5" walnut dowel rod for needle case.

Lathe equipment: 3-4" faceplate, live (rotating) tail center, jaw chuck (if available).

Turning tools:
- ¼" spindle gouge
- ½" and 1" skew
- ½" roundnose scraper
- 3⁄16" parting tool

Lathe speeds:
- Roughing: 500-800 rpm
- Finish-turning: 1000-1200 rpm

No chuck? Try this

If you don't have a lathe chuck, mount the stock between centers. Round it down to ⅞" diameter, and form a ¾" tenon ½" long at the tailstock end. Then, dismount the stock, and remove the drive center from the lathe.

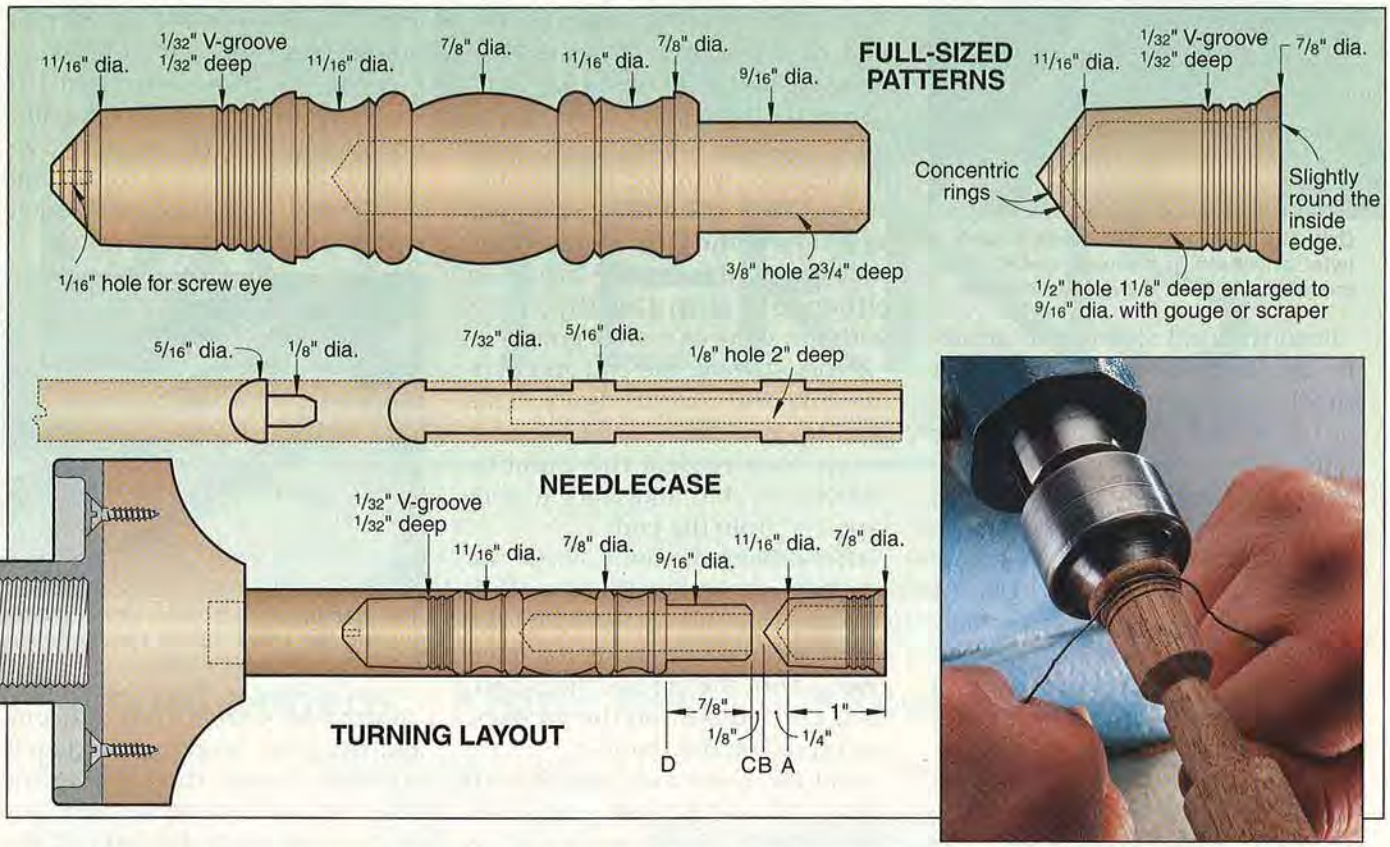
In place of the drive center, install a 3-4" faceplate with a 1-1½"-thick scrapwood disc of the same size attached. True the face and side of the disc. Then, bore a ¾" hole ⅝" deep into the center to create a jam chuck for the workpiece.

To bore the hole, plunge a small gouge (we used a ¼" spindle gouge) straight into the center of the disc, ⅝" deep. (To mark the center easily, start the lathe, then put a pencil point against the disc at the approximate center. Move the pencil toward the center until it draws a point instead of a circle. The point is the center.)

Enlarge the starting hole with a gouge or scraper. Take it easy as you enlarge the hole; the tenon on the workpiece needs to fit snugly into it. Test the fit often.

Print this article

CENTERPIECE



A short length of steel or copper wire works fine for burning in the grooves on the thimble. Don't apply a lot of pressure; just let friction do the work.

Glue the workpiece tenon into the hole. For a quick start-up, choose cyanoacrylate adhesive or five-minute epoxy. Bring the tailstock up to center the workpiece.

Turn a thimble to start

Three major parts make up the sewing kit: the body, a thimble that doubles as its lid, and the combination thread bobbin and needlecase that fits inside. We'll start with the thimble.

Draw a line on the workpiece 1" from the tailstock end (Line A on the Turning Layout drawing). Also draw lines 1¼" (Line B), 1⅜" (Line C), and 2¼" (Line D) from the tailstock end. Note the corresponding features on the drawing.

Form the bead for the thimble rim at the end of the stock. Then, taper the thimble side to 11/16" diameter at the 1" line. Decorate the side of the thimble with V-grooves where shown.

After cutting the V-grooves with the point of the skew, burn them in. To do this, wrap the ends of a 12" length of thin copper or steel wire around two dowels for handles. Then, with the workpiece turning, press the wire into the grooves, as shown *above right.*

Begin to shape the end of the thimble, but leave it connected with a tenon about ½" in diameter. At the same time, turn a tenon about 9/16" diameter between lines C and D. The diameter need not be precise now. Later, you'll size it to fit the inside of the thimble.

Now, hollow the thimble

Bore the thimble hole. To do this, we installed a ½"-capacity Jacobs-type drill chuck in the lathe's tailstock. (You can buy a ½" chuck mounted on a Morse Taper shaft for this purpose from many woodturning dealers, including Craft Supplies USA, 800/551-8876, and Packard Woodworks, 800/683-8876. The cost is about $40.)

Chuck in a ½" bit (we used a ½" Black and Decker Bullet twist drill), and wrap a strip of masking tape around it 1⅛" from the tip. This will be your depth gauge. Run the lathe at a slow speed, and advance the bit toward the workpiece. Guide the turning with your hand, bringing its center to the point of the bit.

Continued

Drill the hole into the thimble with a twist drill held in a chuck mounted on the tailstock. Mark the depth with tape.

Feed the drill slowly and steadily, as shown *above*, retracting it slightly a couple of times to clear chips. Drill until you reach the tape mark.

Using a small gouge or scraper, enlarge the hole to 9/16", but be careful not to make the hole larger than the tenon on the body. (A hole slightly smaller than 9/16" may better suit some needleworkers. If possible, test the size as you work.) Take small cuts to prevent overenlarging the hole or dislodging the turning from the jam chuck. Keep the wall of the hole straight, and slightly round the inside edge at the rim for comfort.

Part off the thimble. Cut in as far as you can while shaping the end with the skew. Then saw off the thimble 1¼" from the end.

Fit the thimble to the body

Test-fit the thimble on the body tenon. With the small skew or a sanding block, adjust the tenon diameter so the thimble fits over it snugly. It must fit all the way to the shoulder on the body. You should be able to pull it off with little effort, but it shouldn't be loose enough to fall off.

Now, to finish turning the thimble, chuck it on the sized tenon. Shape the end to the profile shown, taking light cuts. Then, using the point of the skew or parting tool, cut a series of concentric rings on the end. Space them about 1/16" apart, and keep them uniformly deep and wide. Remove the thimble.

Complete the body

Make a light trueing cut across the end of the tenon, if necessary. Bring the tail center up for support.

Turn the beads and coves at the middle of the body. First, mark the features with the point of the skew. Work from the center out as you form the large center bead, then shape the smaller beads on either side of it. Cut the coves with the skew or a small gouge.

Before shaping the end and parting off, drill out the body. This calls for the same tailstock chuck setup used to drill the thimble. Chuck a 3/8" bit, and mark it with tape 2¾" from the end.

After drilling the body, shape the end nearest the headstock to look like the thimble. (It helps to put the thimble on the body for reference.) Turn the tapered sides first, then cut and burn in the grooves, as you did on the thimble.

Sand the body and thimble with 150-, 220-, and 320-grit sandpaper. Then, form the thimble end as you part off the body. When you reach the point that the tenon holding the turning is only 3/16" or so, cut the concentric rings into the end. If you can't quite get in with a skew or parting-tool point, use a nail or a piece of steel rod with a point ground on it.

Finally, part off the body. Drill a 1/16" pilot hole in the end of the body to receive a screw eye for the necklace. Apply a clear finish to the body and thimble.

Now for the needlecase

Drill a 1/8" hole 2" deep straight into the center of a 5" length of 3/8" walnut dowel rod. Chuck the undrilled end in a headstock-mounted Jacobs-style drill chuck. (Or, a jam chuck with a 3/8" hole.) Engage the point of the live tail center in the drilled hole.

Turn the blank down to 5/16" diameter. Then, referring to the Needlecase illustration, mark the three 7/32"-diameter sections on the blank, and turn them to that diameter. We did most of the turning on this small part with a ½" skew. For the sections between the shoulders where an even smaller one would have been handy, we angled the parting tool toward the work and employed it as we would a skew, shown *below*.

The parting tool comes in handy for turning the small thread spools on the outside of the needle case.

Form the case's rounded end and the plug, working alternately on both. To size the stem on the plug, set your calipers a hair larger than the body diameter of the bit you drilled the case with.

As you get close to completing the plug, sand both pieces lightly. Then, part off the needlecase and the plug. Apply a clear finish.

Wrap it up

You can hang the sewing kit from a ribbon, which would be traditional, or a necklace chain. Drive a screw eye appropriate for whichever you choose into the pilot hole in the end. Enlarge the hole, if necessary.

Wind some thread onto the spool sections of the needlecase. To secure the free ends, make a knife cut in each hub. Drop a needle and a pin or two into the case to complete the set.

Project Design: S. Gary Roberts
Photographs: Wm. Hopkins; John Hetherington
Illustrations: Roxanne LeMoine

Classic Country Collection

Stay in touch with America's proud roots by building one or more pieces of this country trio. The collection includes a spacious, two-drawer sideboard, a multipurpose wall shelf, and a stenciled, informal table lamp. We used poplar for the projects, coating each with a French blue paint and a contrasting Early American stain. All totaled, the entire set cost under $200 in lumber and hardware. What a deal!

Continued

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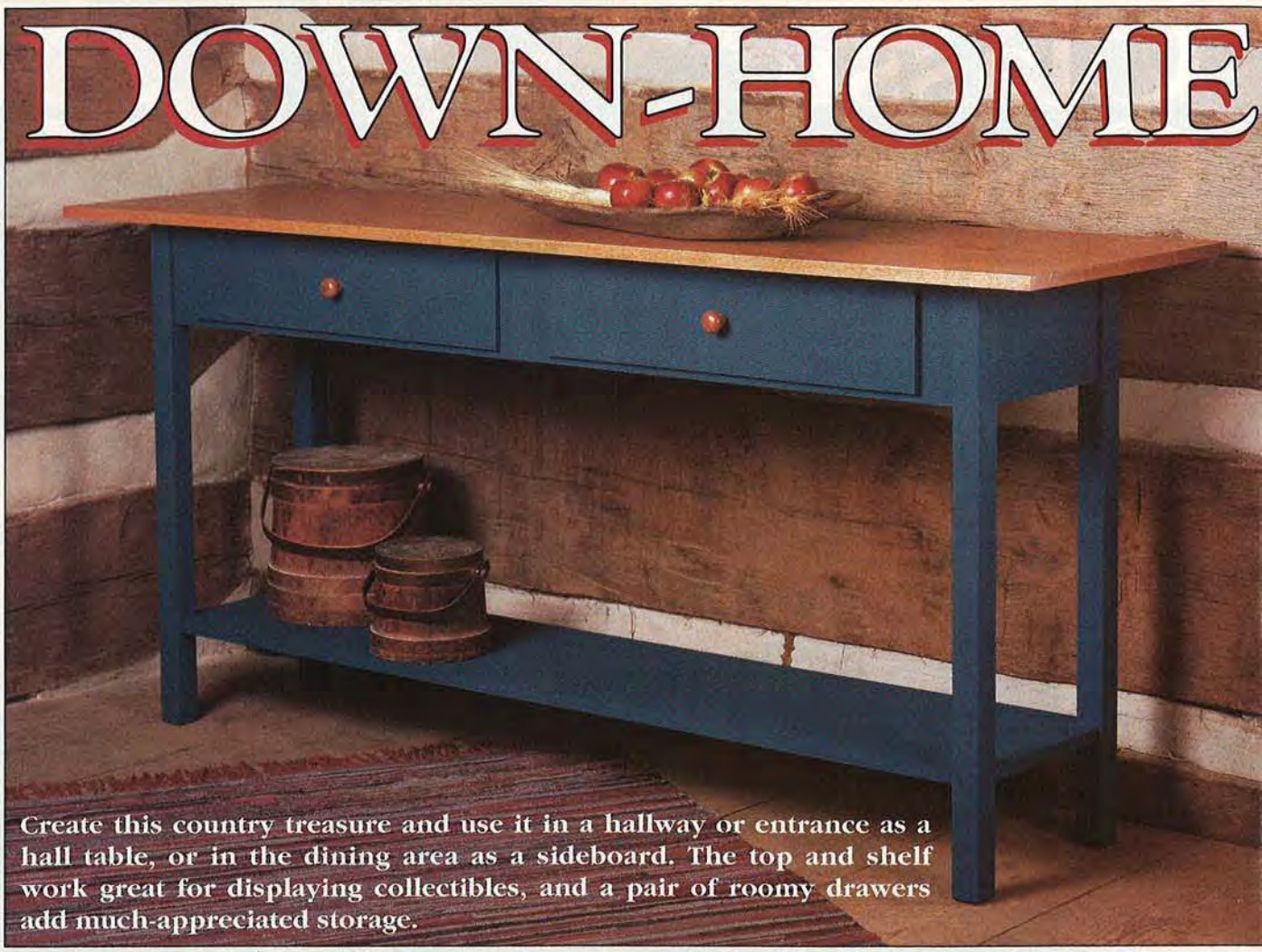
DOWN-HOME



Create this country treasure and use it in a hallway or entrance as a hall table, or in the dining area as a sideboard. The top and shelf work great for displaying collectibles, and a pair of roomy drawers add much-appreciated storage.

To start, machine the four legs

1 From laminated stock or 8/4 material (commonly called eight-quarter stock), cut four 1¾"-square legs (A) to 32¼" long. Mark the mortise locations on adjacent surfaces where dimensioned on the Leg drawing.

2 Fit your table-mounted router with a ⅜" straight bit set to cut ½" deep. Position the router-table fence to cut a mortise centered along the edges of the legs where marked to cut the mortises. Clamp a stop to the fence to ensure all eight mortises are exactly 6⅛" long. Rout the mortises where marked. Chisel the round-routed ends square.

3 Mount a 45° V-block support to your miter gauge as shown in the photo *below*. Fit your tablesaw with a ¾" dado blade. Cut a ¾" dado 1 1/16" deep and 6" from the bottom end of each leg as shown in the photo and dimensioned on the Leg drawing.

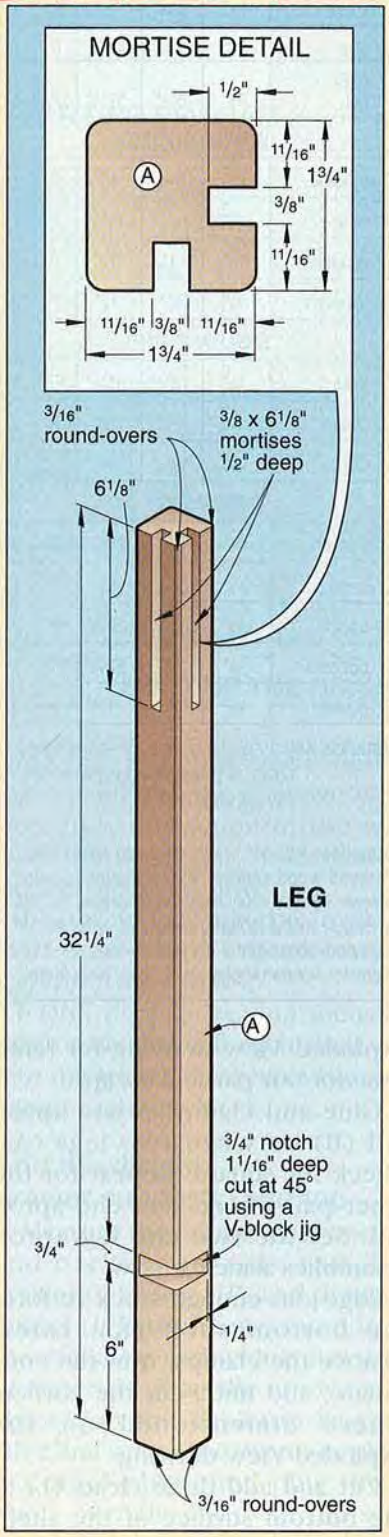
Secure a 45° V-block support to your miter gauge to cut the ¾" notch in each leg.

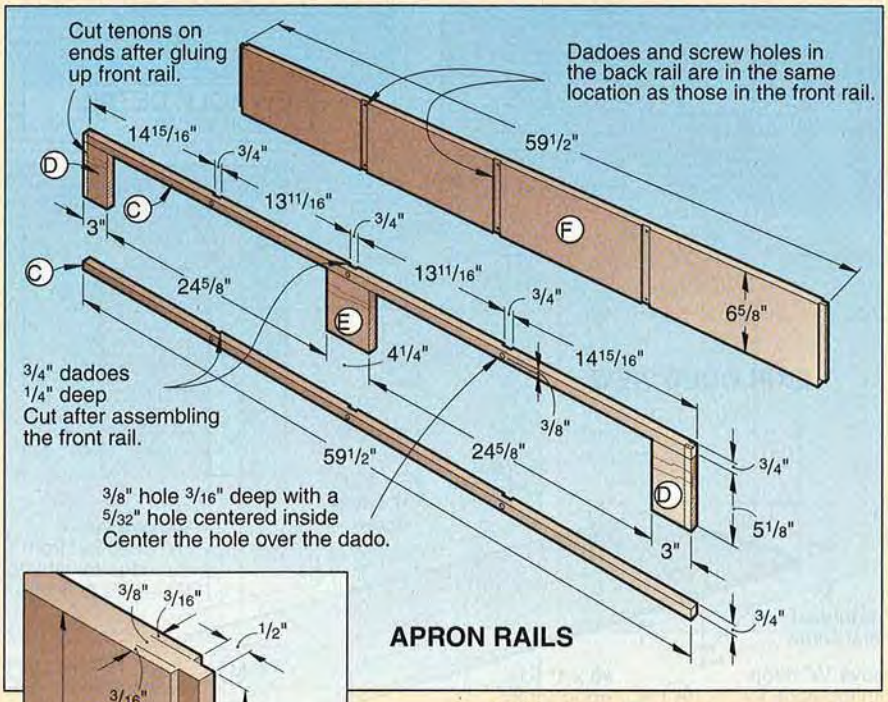
4 Mount a 3/16" round-over bit into your table-mounted router. Position the fence so the leg rides against the fence *and not* the piloted bearing. Rout round-overs on all but the top ends of each leg. Without the fence, the router bit would gouge into the areas around the notches and mortises where the bearing would not have a surface to ride on.

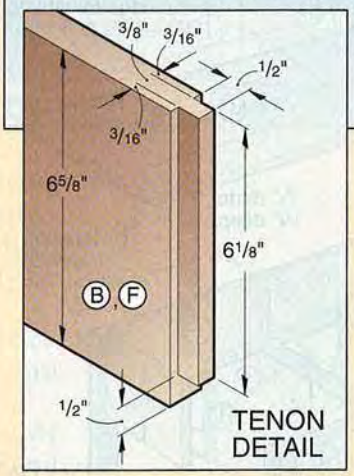
The apron rails and bottom shelf come next

1 Cut the end apron rails (B), the front-apron rail pieces (C, D, E),

SIDEBOARD







and the back apron rail (F) to the sizes listed in the Bill of Materials.

2 Keeping the ends flush, glue and clamp the front-apron rail pieces (C, D, E) together in the configuration shown on the Apron Rails drawing.

3 Using your tablesaw fitted with a miter-gauge extension and a dado blade, cut tenons on the ends of the front, back, and end apron rails. See the Tenon detail accompanying the Apron Rails drawing for reference. (We cut scrap stock first to verify a tight fit of the tenons in the mating leg mortises.) Use a stop on your miter-gauge extension for consistent tenon lengths.

4 Mark the locations, and cut three ¾" dadoes ¼" deep on the *inside surface* of the front and back apron rails (C, F) where dimensioned on the front rail on the Apron Rails drawing.

5 Mark the centerpoints, and drill ⅜" holes 3/16" deep centered over the dadoes cut in the previous step where located on the Apron Rails drawing. Then, drill a 5/32" hole, centered inside each ⅜" counterbore.

6 Cut the ⅛" grooves on the inside surface in the end aprons (B) for housing the tabletop fasteners later. Cut a scrap piece of wood first. We found that tabletop fasteners vary slightly in size and require different groove locations. See the Tabletop Fastener detail accompanying the

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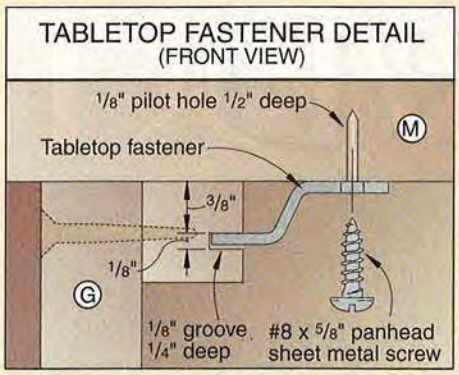
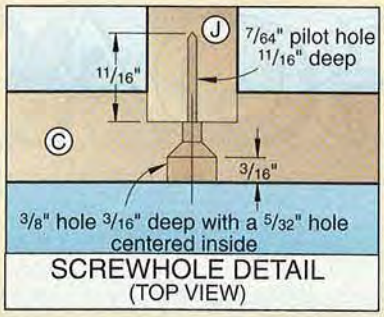
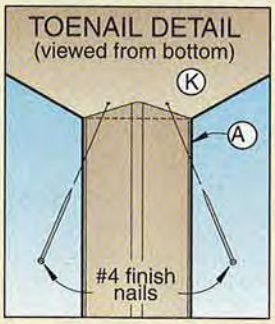
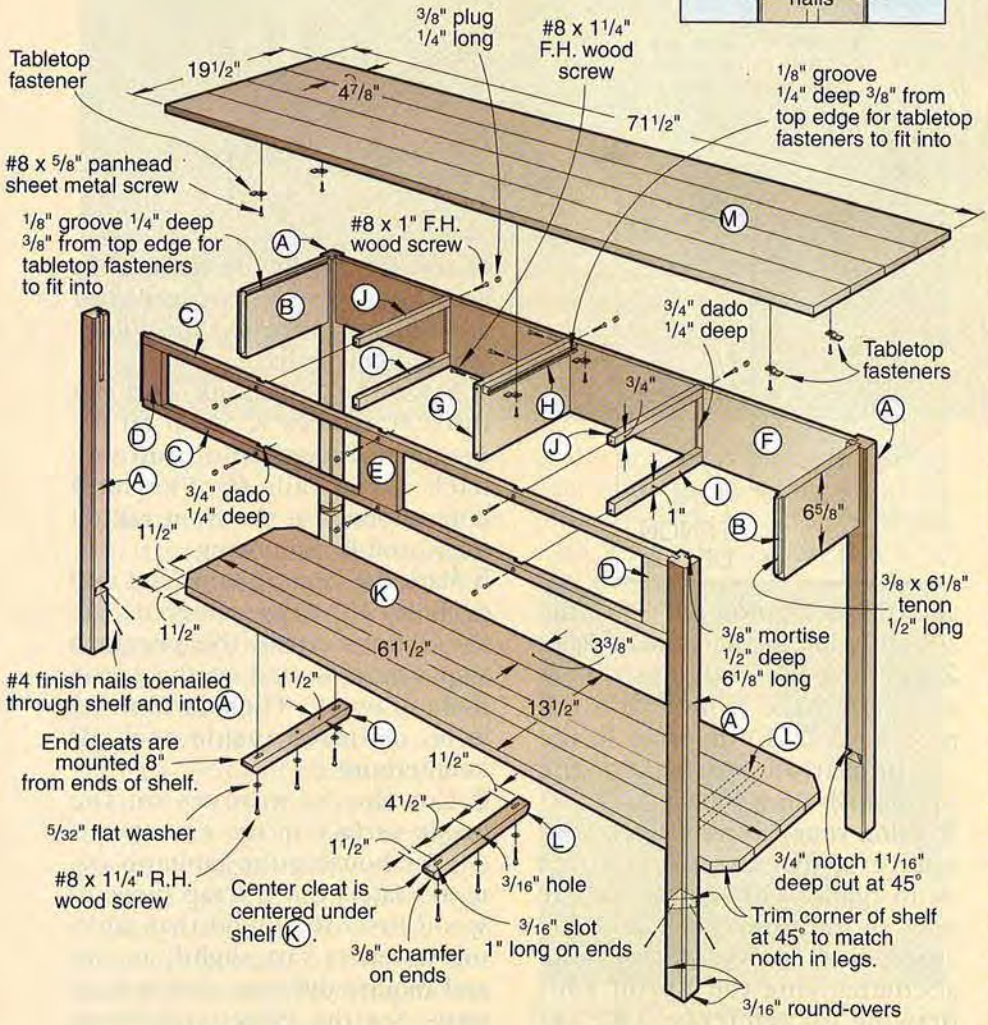
DOWN-HOME SIDEBOARD







EXPLODED VIEW



Bill of Materials					
Part	Finished Size			Matl.	Qty.
	T	W	L		
LEGS AND APRON RAILS					
A legs	1¾"	1¾"	32¼"	P	4
B end rails	¾"	6⅝"	11½"	P	2
C rails	¾"	¾"	59½"	P	2
D stiles	¾"	5⅛"	3"	P	2
E stile	¾"	5⅛"	4¼"	P	1
F back rail	¾"	6⅝"	59½"	P	1
DRAWER GUIDES					
G divider	¾"	6⅝"	12"	P	1
H cleat	¾"	¾"	11½"	P	1
I supports	¾"	1"	12"	P	2
J supports	¾"	¾"	12"	P	2
SHELF AND TOP					
K shelf	¾"	13½"	61½"	EP	1
L cleats	¾"	1½"	12"	P	3
M top	¾"	19½"	71½"	EO	1
DRAWERS					
N fronts	¾"	5⅝"	25⅛"	P	2
O sides	½"	5 1/16"	12"	P	4
P backs	½"	4 9/16"	24⅜"	P	2
Q bottoms	¼"	12"	23¾"	PW	2
R guides	3/16"	¾"	11¾"	P	4

Materials Key: P–poplar or pine, EP–edge-joined poplar or pine, EO–edge-joined oak, PW–plywood

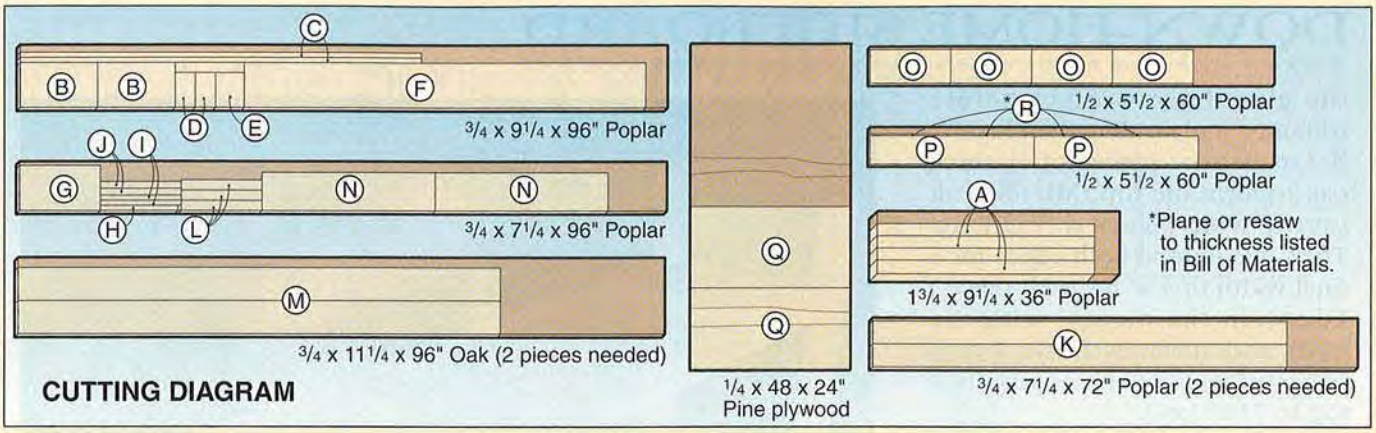
Supplies: #17x¾" brads, #4 finish nails, #8x1" flathead wood screws, #8x1¼" flathead wood screws, #8x1¼" roundhead wood screws, 5/32" flat washers, metal tabletop fasteners with #8x⅝" panhead sheet metal screws, 2–1 3/16"- or 1¼"-diameter wooden knobs, paint, stain, clear finish.

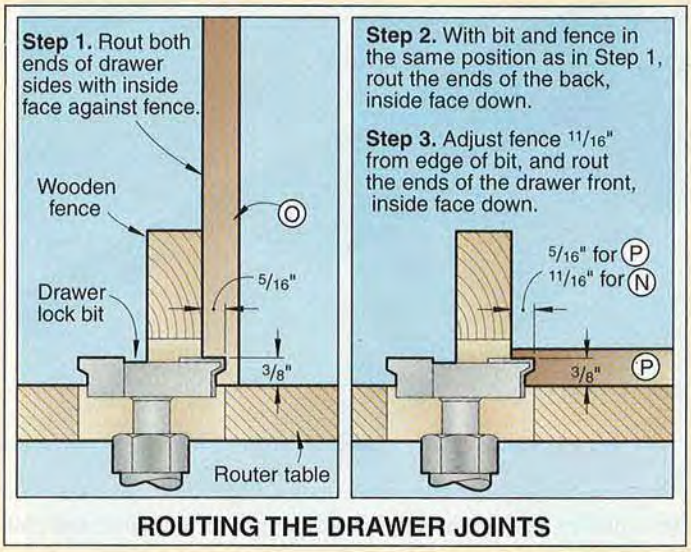
Exploded View drawing for reference for our particular clip.

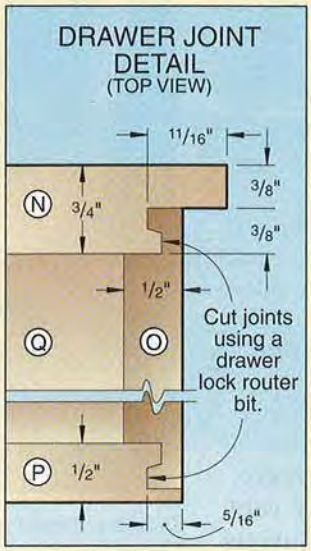
7 Glue and clamp an end apron rail (B) between two legs (A). Check for square. Repeat for the other pair of legs and end apron rail. Set the two end leg/apron assemblies aside for now.

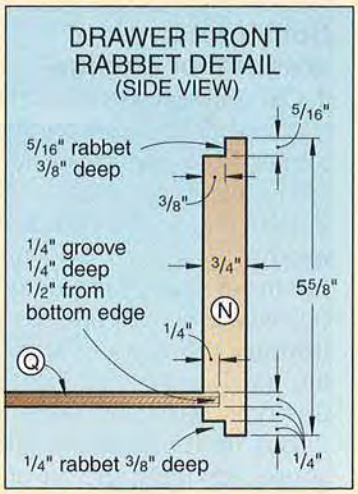
8 Edge-join enough stock to form the bottom shelf (K). Later, remove the clamps, trim the ends square, and miter-cut the corners where dimensioned on the Exploded View drawing.

9 Cut and add three cleats (L) to the bottom surface of the shelf.




Step 1. Rout both ends of drawer sides with inside face against fence.
Wooden fence
O
Drawer lock bit
5/16"
3/8"
Router table
Step 2. With bit and fence in the same position as in Step 1, rout the ends of the back, inside face down.
Step 3. Adjust fence 11/16" from edge of bit, and rout the ends of the drawer front, inside face down.
5/16" for P
11/16" for N
3/8"
P
ROUTING THE DRAWER JOINTS





Note that the cleats have slots allowing the outside screws to move with expansion and contraction of the wide shelf. Drill the mounting holes and form the slots in the cleats now.

10 Glue and clamp the front and back rails and shelf between the end leg/apron assemblies.

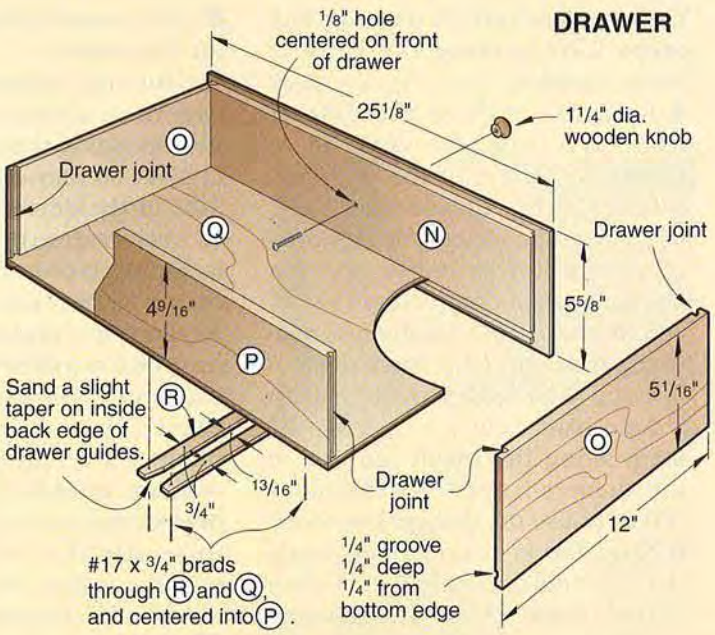
11 Drill pilot holes, and toenail two #4 finish nails through each shelf corner and into the legs. This secures the shelf to the legs at each notch.

Add the divider, drawer supports, and top

1 Measure the distance between the front and back apron rails. Cut the center divider (G), cleat (H), and drawer support guides (I, J) to the measured length from the thickness and widths listed in the Bill of Materials. Rout the groove in H where shown on the Tabletop Fastner detail. Glue and screw the pieces in place.

2 Cut 3/8" plugs, and plug the counterbores over the heads of the screws. Let

Continued



the glue dry overnight before trimming and sanding the plugs.

3 Cut narrow pieces of ¾"-thick oak to form the top (M). (We cut four 5"-wide pieces to 73" long. Then, we jointed both edges for a final width of 4⅞" for each piece.) Edge-join the pieces, with the ends and surfaces flush. Later, trim the ends of the edge-joined top to 71½" long.

Construct a pair of drawers for storage

1 Cut the drawer fronts (N), sides (O), backs (P), and plywood bottoms (Q) to the sizes listed in the Bill of Materials.

2 Using a drawer lock bit (we used a Freud #99-240 bit), rout the inside face of the drawer sides (O) where shown on Step 1 of the Routing the Drawer Joints drawing. (We realize not everyone has this type of bit, but the joint produced by it stands up to a lot of abuse, making it the bit of choice. Note that different bits may vary in profile of cut. See the Buying Guide for our source.)

3 Rout the ends of the drawer backs (P) where shown on the Steps 2 of Routing the Drawer Joints drawing.

4 Rout the ends of the drawer fronts (N) using the same bit as shown in Step 3 of the drawing. When routing the drawer ends, use a wooden extension mounted to your miter gauge to prevent chip-out when completing the cut across the grain. As always, test-rout a piece of scrap stock first.

5 Using your tablesaw fitted with a dado blade, cut a ¼" groove ¼" deep along the inside surface of the drawer fronts (N) and sides (O) to house the drawer bottoms.

6 Now, cut ⅜"-deep rabbets along the top and bottom edge of each drawer front where dimensioned on the Drawer Front Rabbet detail *above* the Drawer drawing.

7 Dry-clamp each drawer together. Measure the opening, and cut the drawer bottoms (Q) to size.

Slide the drawer bottom guides against the drawer supports, and then glue and nail the guides to the drawer bottoms.

8 Drill holes in the drawer fronts for the knobs.

9 Glue and clamp the drawers together, checking for square. Just spot-glue the drawer bottoms in place so they don't rattle.

10 Cut the drawer bottom guides (R) to size, tapering the back inside edge of each where shown on the Drawer drawing.

11 Turn the project upside down on your workbench. Slide the drawers (also upside down) in place. Now, as shown in the photo *above*, position the drawer bottom guides (R) against the drawer supports (I). Use ¾" brads to secure the back ends of the guides in place where shown on the Drawer drawing.

12 Finish-sand the carcase and drawers. Finish the sideboard to match your woodwork or other country pieces. (We used Mautz French Blue on all but the top and knobs. For the top, we used Minwax Early American Stain, sealed with Deft Semi-Gloss Lacquer.) Using the fasteners, secure the top to the base. Screw a knob to each drawer front.

Buying Guide

Router bit. Freud #99-240 drawer lock bit, $59.95 ppd. Puckett Electric Tools, 841 Eleventh St., Des Moines, IA 50309. Or call 800/544-4189 or 515/244-4189 to order.

Hardware. Two 1 3/16"-diameter oak knobs (#SBH24) and bag of ten steel tabletop fasteners (#96N4). Constantines, 2050 Eastchester Rd., Bronx, NY 10461 or call 800/223-8087 for current prices and ordering information.

Written by Marlen Kemmet
Project Design: Darla and Chuck Raney
Illustrations: Kim Downing; Lorna Johnson
Photographs: Bill Hopkins; John Hetherington

GRACEFUL AND EASY WALL SHELF

Whether you use it for hanging coats, mugs, or hand-dipped candles, with this simply constructed accent, you can countrify your home's entry or kitchen in a hurry. The Shaker pegs and eye-catching paint capture the look of days gone by.

Start the construction with a pair of matching ends

1 Rip and crosscut the ends (A) to the size listed in the Bill of Materials and dimensions shown on the Shelf End drawing. Although pine is a popular material for country projects, we chose poplar. We've found poplar easier to paint, more stable, cheaper, and with fewer knots than pine.

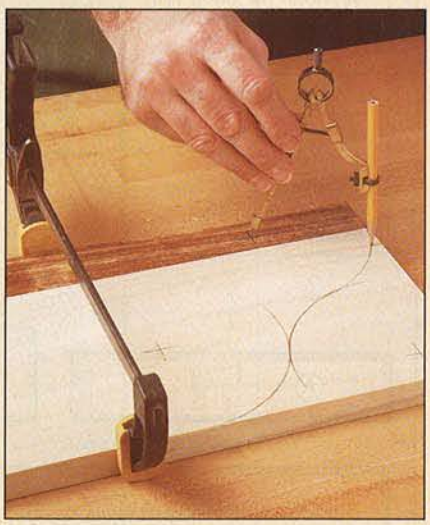
2 Using the Shelf End drawing for reference, mark the radii on one shelf end. As shown in the photo *below right*, we clamped a piece of scrap stock (stained in the photo for easier visibility) to the back edge of the end piece. You'll need to do this so you have a solid surface for marking the bottom arc with your compass.

3 Using double-faced tape, stick the two pieces together with the edges and ends flush. Bandsaw and sand the bottom front edge of the taped-together pieces to shape. Cutting and sanding both at one time ensures identically shaped end pieces. Separate the pieces and remove the tape.

4 Lay out and cut a ¾" dado ¼" deep on the *inside face* of both end pieces. (We did this on our tablesaw using the miter gauge fitted with a wood extension.) Be sure to mark both dadoes before cutting because it's easy to forget and cut both dadoes on the same face of each.

5 Mark the centerpoints on the outside face for the screw holes. Drill a counterbored mounting hole at each marked centerpoint.

Continued



Clamp a piece of scrap stock to the back edge of the end piece, and mark the three 3¼" arcs with a compass.

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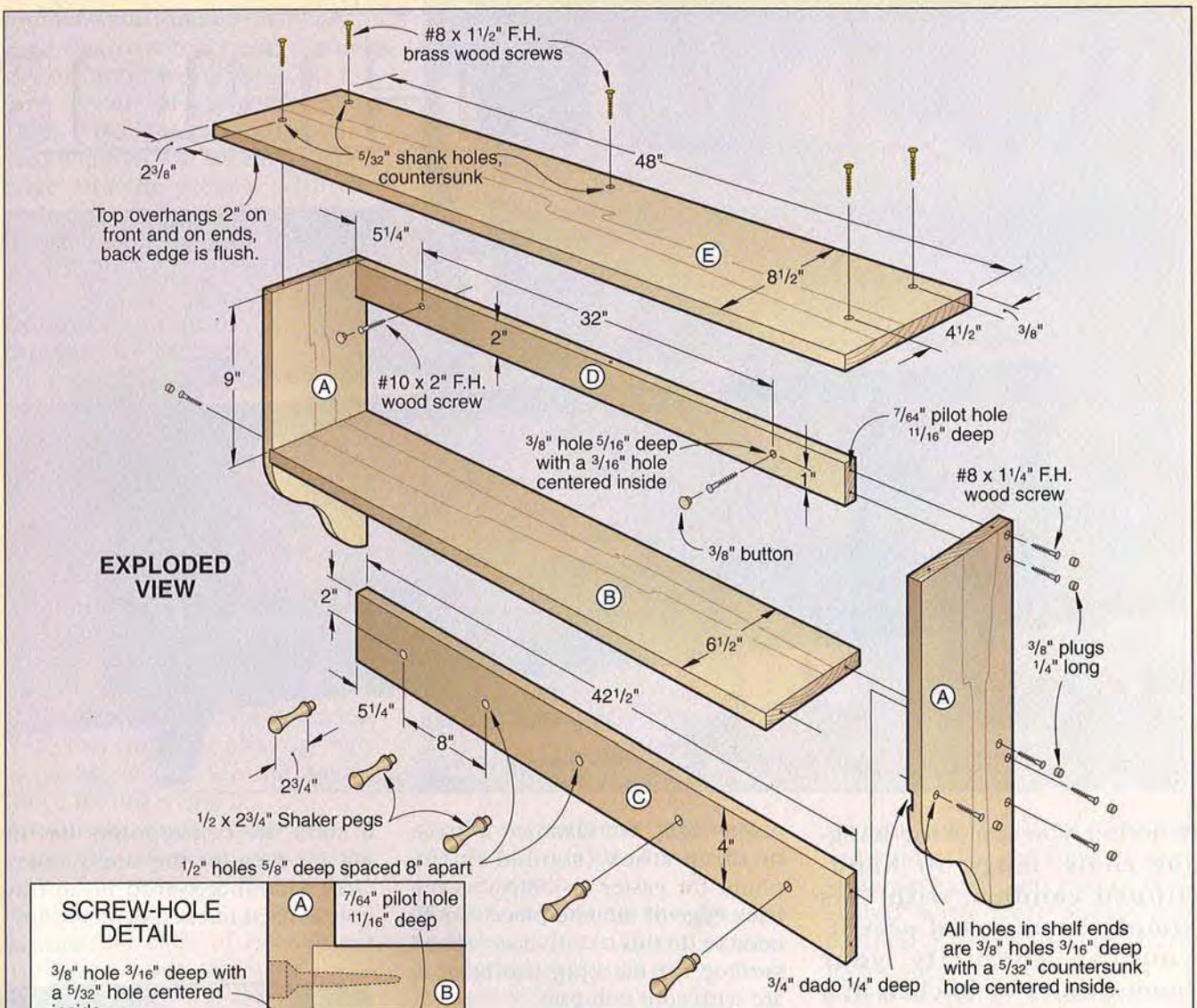
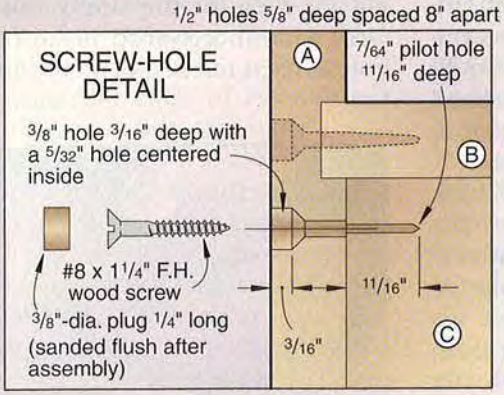
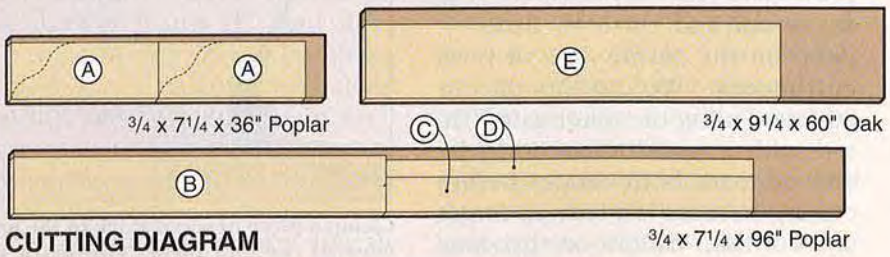
WALL SHELF







CUTTING DIAGRAM

Bill of Materials

Part	Finished Size T	W	L	Matl.	Qty.
A ends	¾"	6½"	17"	P	2
B shelf	¾"	6½"	43"	P	1
C stretcher	¾"	4"	42½"	P	1
D ledger	¾"	2"	42½"	P	1
E top	¾"	8½"	48"	O	1

Materials Key: P–poplar or pine, O–oak.

Supplies: 5–½x2¾" oak Shaker pegs, #8x1¼" flathead wood screws, #8x1½" flathead brass wood screws, #10x2" flathead wood screws, 2–⅜" wood buttons, paint, stain, clear finish.

Add the shelf, stretcher, and ledger strip

1 Cut the shelf (B), stretcher (C), and ledger (D) to size.

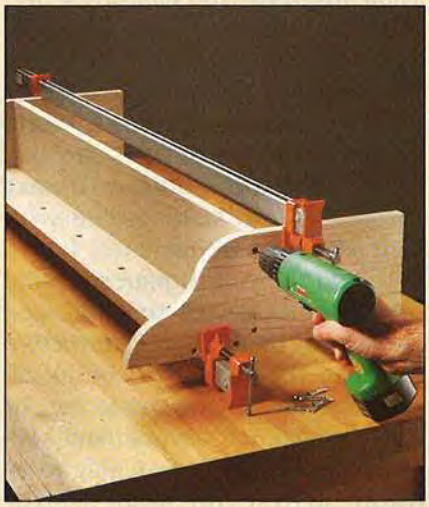
2 Lay out the hole centerpoints on the front face of the stretcher (C). Drill a ½" hole ⅝" deep at each marked centerpoint. (We've found that the tenons on Shaker pegs vary slightly in length and diameter. We recommend drilling mounting holes in scrap stock first to verify a tight fit.)

3 For securing the completed project to the wall later, mark the centerpoints, and drill a pair of counterbored holes in the ledger (D). If you plan on using this for hanging coats or displaying heavy items, position the holes in the ledger to center over wall studs where you plan to hang the shelf.

4 Glue and clamp the shelf assembly together. Check for square. Drive the screws as shown in the photo *below*.

5 Using a ⅜" plug cutter, cut a plug for each of the counterbored holes, except those in D. You'll cover these with buttons after hanging. Glue the plugs in place, aligning the grain of the plug with that of the surrounding wood. Allow the glue to dry 48 hours before trimming and sanding flush. This allows the swelling of the wood fibers caused by the glue to dry out. If you trim a plug too soon after gluing, the plug will continue to shrink, creating a depression after the plug has completely dried.

A cordless drill works great for driving the screws to assemble the clamped-together shelf pieces.



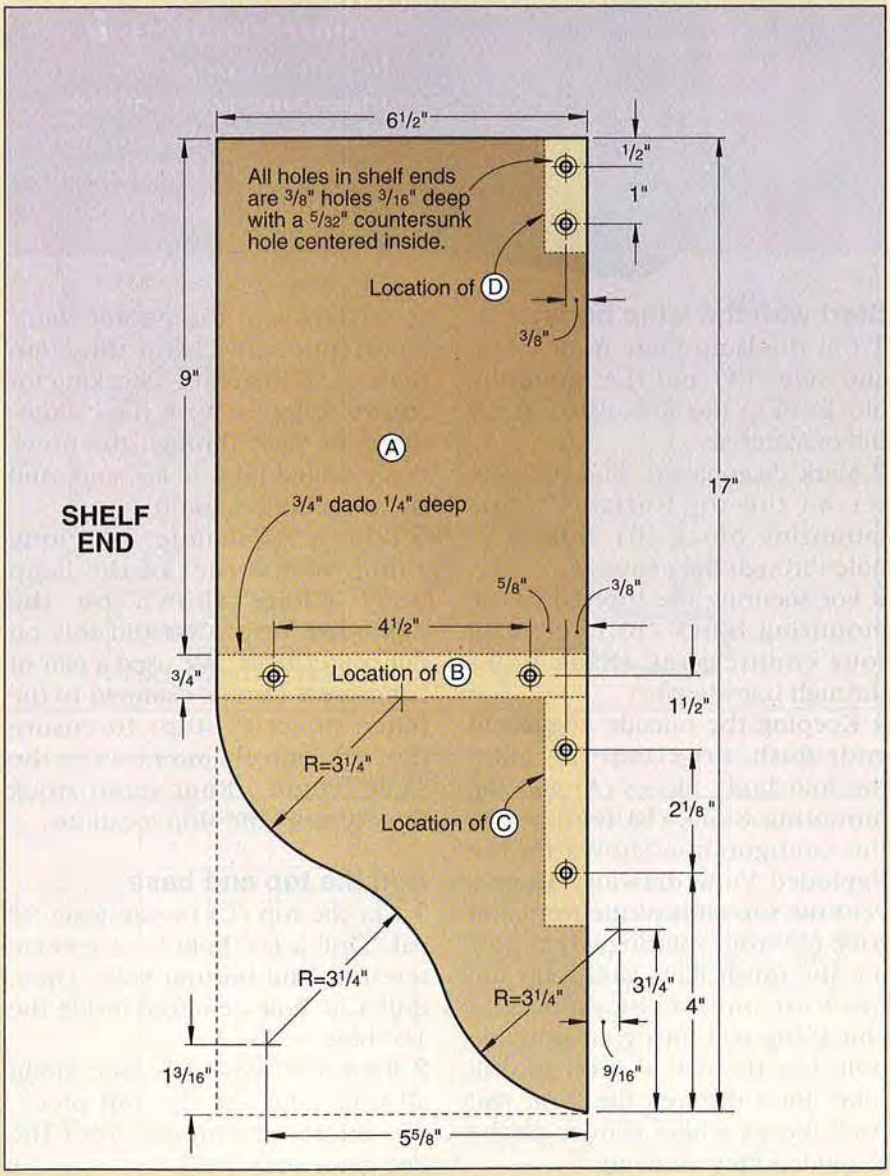
Add the top shelf and then the finish

1 Cut the top (E) to size from ¾" oak. Mark the five centerpoints, and drill mounting holes for mounting the top to the end pieces and ledger later.

2 Sand all the pieces smooth. Then, finish the shelf to match your current woodwork or other country pieces.

3 Screw the top in place, and glue the Shaker pegs in place. Hang the shelf, and cover the screw heads with the ⅜" wood buttons. To keep the wood buttons from falling out yet easily removed if necessary, hold each in place with a dab of silicone.

Written by Marlen Kemmet
Project Design: Darla and Chuck Raney
Illustrations: Kim Downing
Photographs: King Au



Classic Country Collection

STENCILED

This down-to-earth table lamp completes the three-piece woodsy country collection we began on *page 53*. The pine-cone pattern adds a pleasing touch, and it's a great way to try your hand at stenciling.

Start with the lamp body

1 Cut the lamp body front, back, and sides (A) and the mounting block (B) to the sizes listed in the Bill of Materials.

2 Mark diagonals to find the center on the top surface of the mounting block (B). Bore a 2" hole through the center.

3 For securing the top (C) to the mounting block (B) later, drill four countersunk shank holes through B.

4 Keeping the outside edges and ends flush, dry-clamp (no glue) the four body pieces (A) and the mounting block (B) together in the configuration shown on the Exploded View drawing. To prevent the top ends of the front and back (A) from splitting when driving the finish nails later, clip the head off one of the nails, and chuck the nail into your portable drill. Use the nail as a bit to drill pilot holes through the front and back pieces where shown on the Exploded View drawing.

5 As shown in the photo *above right*, glue and clamp the lamp body (A, B) together, checking for square. Later, remove the clamps, drive the nails through the previously drilled pilot holes, and sand the lamp body smooth.

6 Rout a ¼" chamfer 6¾" long along each corner of the lamp body where shown on the Exploded View. (We did this on our router table. We used a pair of handscrew clamps clamped to the fence to act as stops to ensure that all four chamfers were the same length.) Rout scrap stock first to verify the stop locations.

Add the top and base

1 Cut the top (C) to size from ¾" oak. Drill a 1½" hole ⅜" deep centered on the bottom side. Then, drill a ⅜" hole centered inside the 1½" hole.

2 Rout a ⅜" cove ⅜" deep along all four edges of the top piece. (To minimize chipout, rout the end grain ends first.)

You'll need several clamps to clamp the lamp body together. Don't forget to check for square.

3 Cut a piece of ¾"-thick stock to 2" wide by 36" long for the base-molding pieces (D). Now, rout a ⅜" cove ⅜" deep along one edge of the 36"-long strip. Sand the strip smooth.

4 Miter-cut the four base-molding pieces (D) to wrap around the lamp body. Glue and clamp the pieces in place.

5 Cut a 3/16" cord-access notch in the bottom edge of the lamp where shown on the Exploded View drawing.

Paint, stain, and add the lamp parts

1 Fill any voids and nail holes, and then sand the lamp smooth.

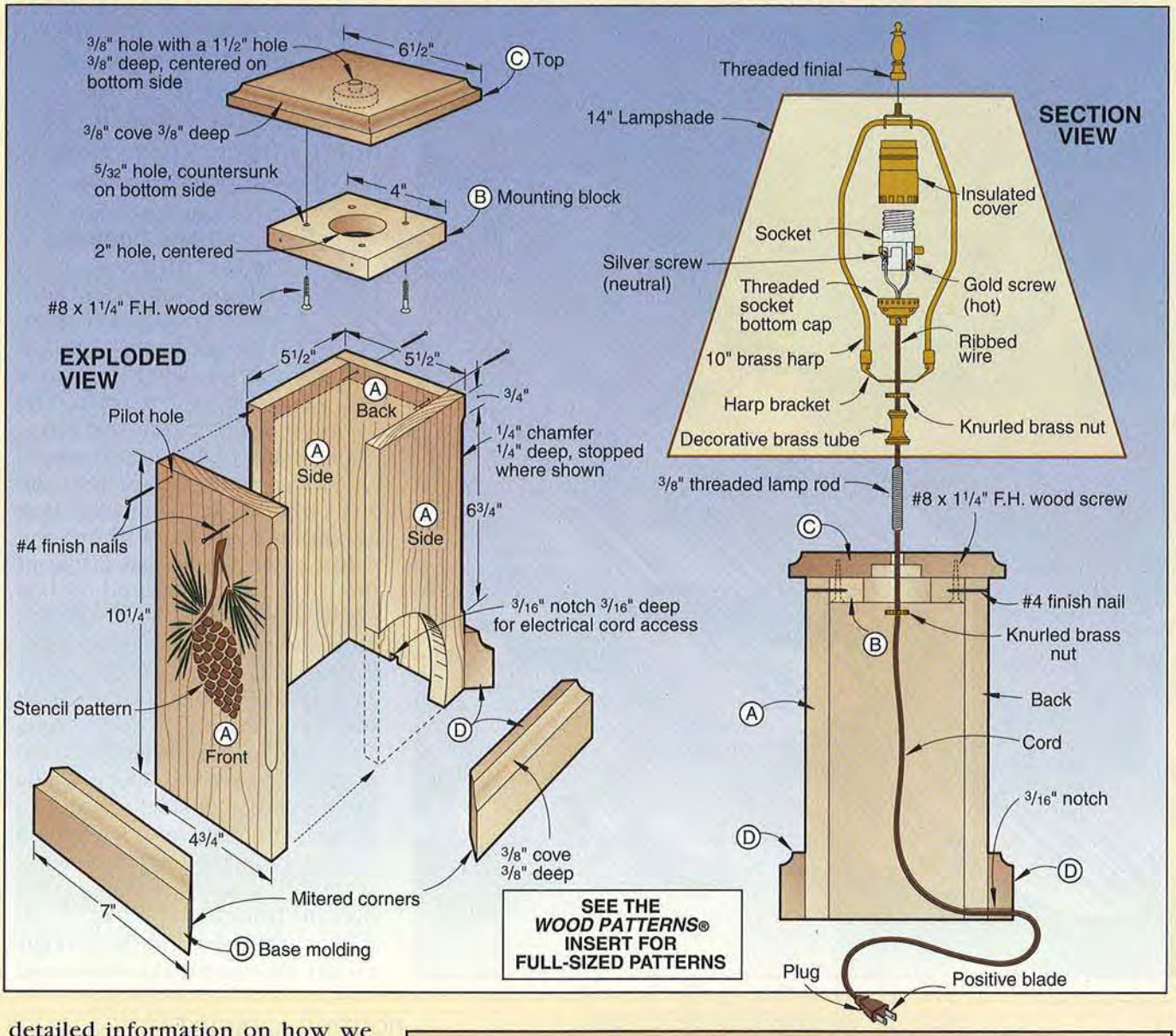
2 Finish the lamp body to match your current woodwork or other country pieces. We used Mautz French Blue on all but the top (C). For the top, we used Minwax Early American stain, sealed with Deft semigloss lacquer.

3 To add the stencil pattern to the lamp front (A), see the full-sized pattern on the *WOOD PATTERNS®* insert in the center of the magazine. See the Buying Guide for our source of stencil material and supplies. And, see our stenciling technique article on *page 14* for

Print this article

Wiring diagram: The silver colored screw is the neutral, but it should be attached to the ribbed conductor. The broadest blade on the plug is neutral, not hot as originally shown. See Talking Back August 1997, page 4 for illustration. Click here to view.

COUNTRY LAMP



detailed information on how we stenciled our lamp.

4 Center the top (C) over the mounting block (B), and drive screws through the previously drilled holes in B to secure the top to the lamp body.

5 Add the lamp parts to the lamp in the configuration shown on the Section View drawing.

6 To protect the surfaces the lamp will be sitting on, we recommend gluing felt or cork to the bottom end of the lamp.

Bill of Materials

Part	Finished Size T	W	L	Matl.	Qty.
A sides	¾"	4¾"	10¼"	P	4
B mounting block	¾"	4"	4"	P	1
C top	¾"	6½"	6½"	O	1
D* molding	¾"	2"	7"	P	4

*Initially cut the molding as one long strip, and then miter-cut it to exact length.

Materials Key: P–poplar or pine, O–oak.

Supplies: #8x1¼" flathead wood screws, #4 finish nails, paint, stain, clear finish.

Buying Guide

Lamp kit. 10" detachable harp, brass finial, socket, brown cord with plug, and all the fittings shown on the Section View drawing. Catalog no. LP769. Constantines, 2050 Eastchester Road, Bronx, NY 10461 or call 800/223-8087 to order.

Stencil kit. Five paints; ¼", ⅜", and ½" stencil brushes; one 12x18" sheet of 4mil Mylar, stencil-cutting knife, tracing pen for Mylar. #619 CL, $29.95 ppd. Stenciler's Emporium, P.O. Box 536, Twinsburg, OH 44087. Or call 800/229-1760 to order.

Project Design: Darla and Chuck Raney Illustrations: Kim Downing Photographs: King Au

A KITCHEN ACCESSORY PARISIANS WOULD LOVE

Vive La

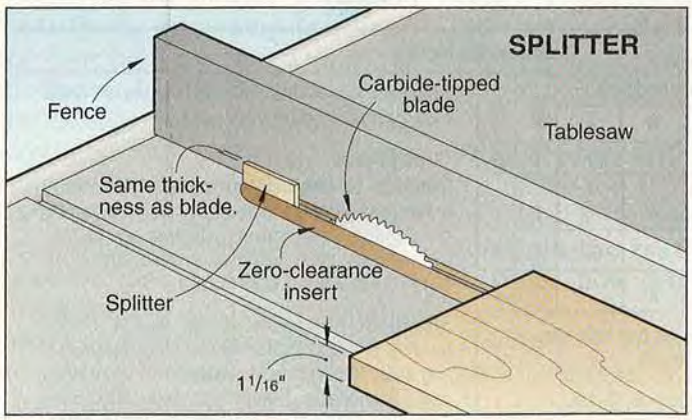
Whether it's French bread or baguette bread you're serving at your next dinner party, you'll get high marks for presenting it on this stylish laminated board. And don't forget: These boards make great presents, too.

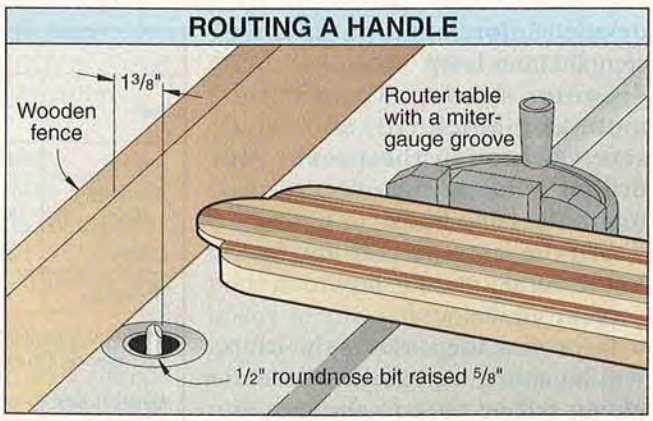
First, cut and laminate the thin strips

1 Build and install into your tablesaw a zero-clearance insert with a splitter. See the Splitter drawing for our setup. The insert prevents the thin strips from being pulled into the saw, and the splitter helps hold the strip being cut from vibrating against the blade. Without the splitter, we found that a few of the thin strips chattered against the blade, marring the surface and preventing a perfect glue joint later.

2 From 1 1/16" stock (commonly called five-quarter stock), cut all the thin strips (A–F) to 24" long and to the widths listed in the Bill of Materials. See the Buying Guide for our source of stock. As shown in the photo *at right*, we used a pushblock made from a piece of scrap 2×4 to safely push the stock over the blade and splitter.

3 Lay out the strips in the configuration shown on the Full-Sized





Print this article

French Breadboard!

End pattern. Then, glue and clamp the pieces together keeping the surfaces and ends flush. If laminating this many strips at one time is a bit daunting, glue the board up in halves, and then join the two halves.

Machine the blank to a pleasing shape

1 Remove the clamps and scrape the excess glue from both surfaces. Face-joint one surface on the jointer until it is flat. Run the lamination through a planer to flatten the opposite face parallel to the first. Our cutting board ended up being ⅞" thick.

2 Make two copies of the full-sized pattern, and adhere one to each end of the lamination.

3 Cut and sand to the lines to shape the ends of the lamination.

Form a handle on each end

1 Install a ½" roundnose bit in a table-mounted router, and adjust it to cut ⅝" deep. Using a miter gauge in the groove in your router table, make numerous passes to cut a ⅝"-deep depression 1⅜" long along the bottoms on the ends of the cutting board where shown on the Routing A Handle drawing. If your router table doesn't have a miter-gauge groove, cut the handle depressions on your tablesaw with a dado blade, and then use a large pushblock to make the final cut using a roundnose bit and your router table.

2 Sand the underside of the handle. Finish-sand the entire board. Apply several coats of Behlen's Salad Bowl Finish.

Written by Marlen Kemmet
Project Design: David Jordan
Illustrations: Roxanne LeMoine; Lorna Johnson
Photographs: Bill Hopkins

Bill of Materials

Part	Finished Size T	W	L	Matl.	Qty.
A strip	1 1/16"	1/16"	24"	M	1
B strips	1 1/16"	1/8"	24"	M	8
C strips	1 1/16"	5/8"	24"	M	4
D strips	1 1/16"	1/16"	24"	C	4
E strips	1 1/16"	1/8"	24"	C	4
F strips	1 1/16"	1/4"	24"	C	4

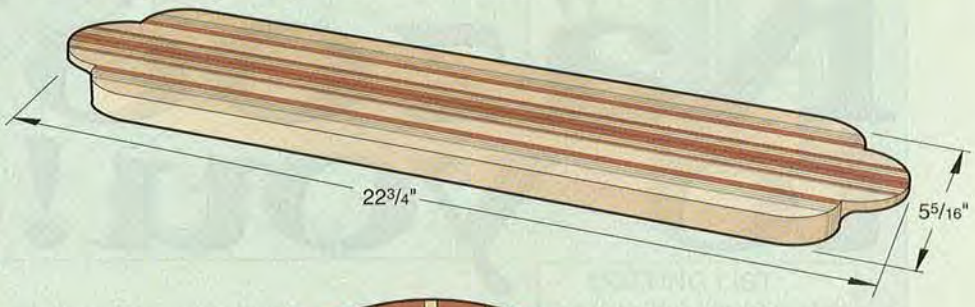
Materials Key: M–hard maple, C–cardinal wood.

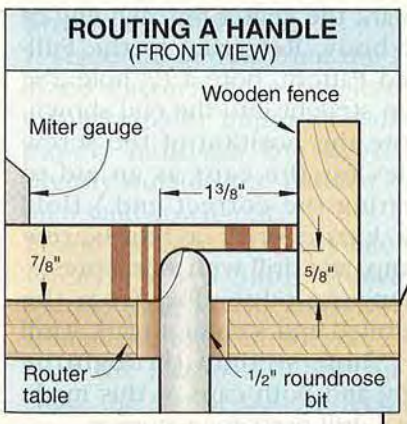
Buying Guide

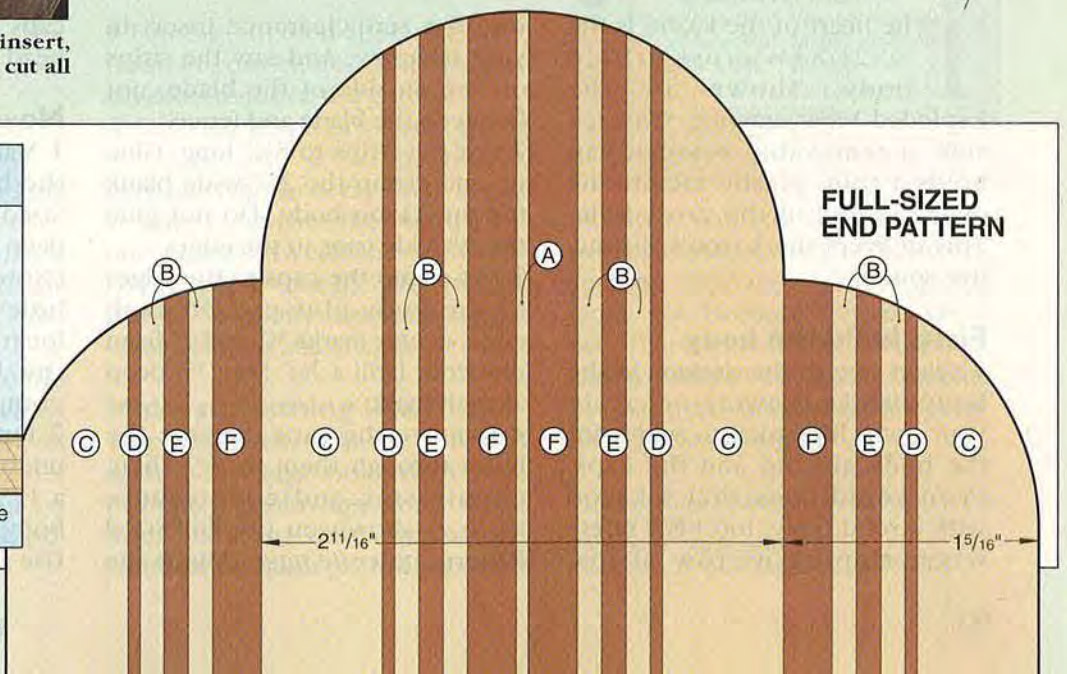
Hardwood kit. Enough 1 1/16"-thick maple and cardinal wood strips cut to the sizes listed in the Bill of Materials. Kit no. W921, $14.95 ppd., contains enough strips for one breadboard, or kit no. W9215, $64.95, with enough strips for five boards. Heritage Building Specialties, 205 North Cascade, Fergus Falls, MN 56537. Or call 800/524-4184 to order.

Behlen's Salad Bowl Finish. Pint, catalog no. BB615; quart, BB616. Call for prices. Constantine's, 2050 Eastchester Rd., Bronx, NY 10461. Or call 800/223-8087 to order.

A pushblock, a zero-clearance insert, and a splitter allow you to safely cut all the thin strips.







Easy to make, easy to play

Kazoo to you!

Had Antonio Stradivari built kazoos instead of his celebrated violins, they might have looked like this. He didn't, but you can. After you do, you'll have great fun rendering musical masterpieces.

The heart of the kazoo is the ¾×2¼×3¾" cross-drilled body, shown in the Exploded View drawing. On each side, a removable wooden cap holds a thin, plastic membrane over the end of the cross hole. This delivers the kazoo's distinctive sound.

First, build the body

1 Select one of the designs in the Body Blanks drawing or create your own. Rip stock to width for the body glue-up and the caps. (You could construct a kazoo with a solid body, too.) For safety when ripping narrow strips, install a zero-clearance insert in your tablesaw. And saw the strips on the outside of the blade, not between the blade and fence.

2 Cut the strips to 3¾" long. Glue up and clamp the 2¼"-wide blank for the kazoo body. Do not glue the ⅜"-wide caps to the edges.

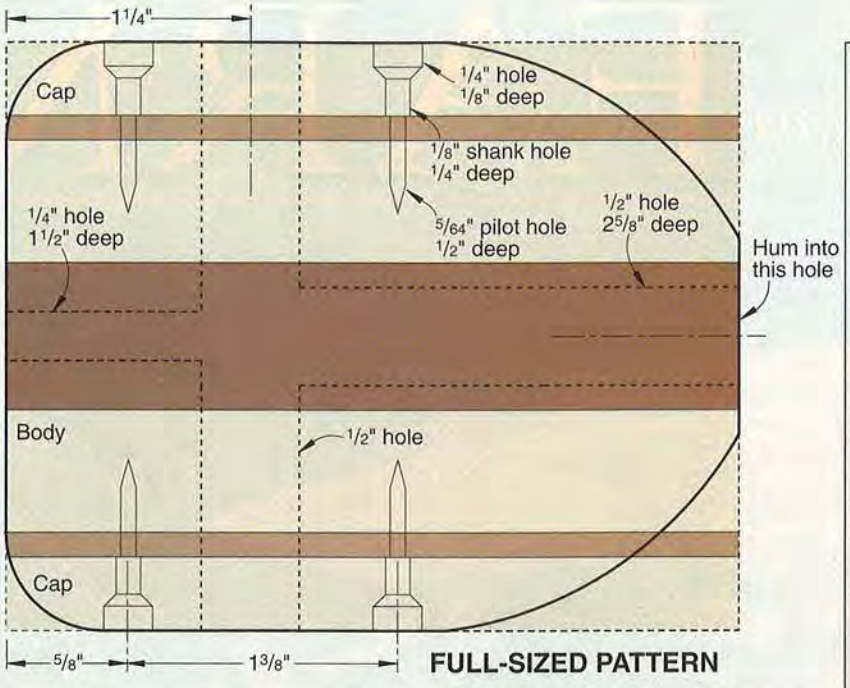
3 Dry-clamp the caps to the edges of the body glue-up. On each edge, center marks ⅝" and 2" from one end. Drill a 5/64" hole ⅞" deep at each mark.

4 Remove the caps. Enlarge the holes through them to ⅛". Then, countersink and counterbore them as shown on the Full-Sized Pattern, *opposite page*. Attach the caps to the body with #5×¾" flathead brass wood screws.

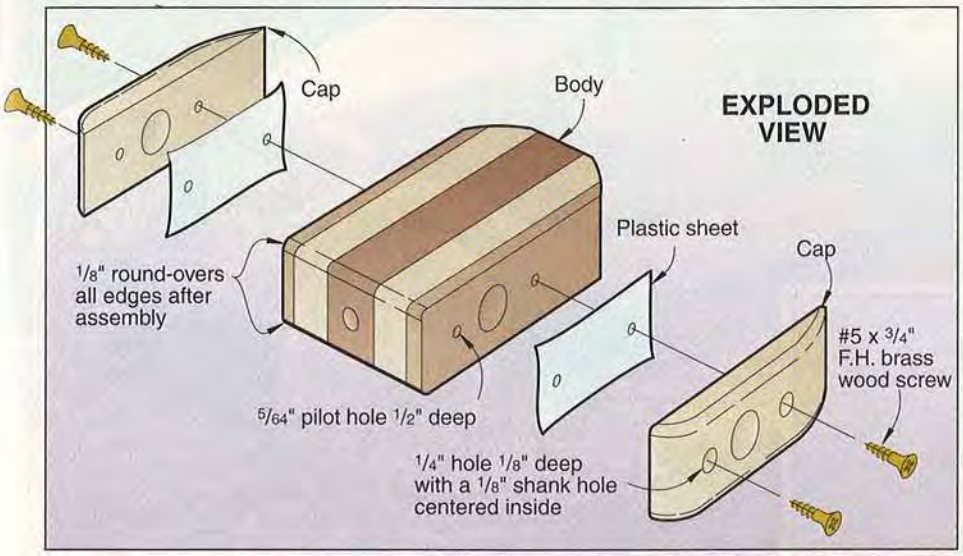
Now, drill the airways

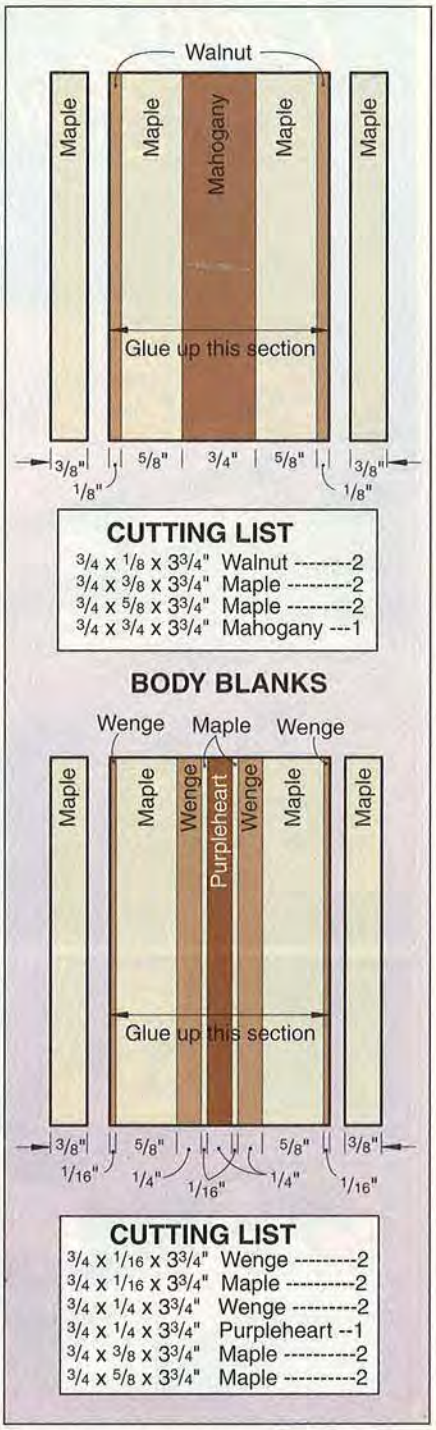
1 Mark the center on each end of the body. Referring to the Full-Sized Pattern, bore a ½" hole 2⅝" deep straight into the end shown. (Note the position of the screw holes for the caps as an aid to locating the correct end.) Hold the kazoo with a handscrew clamp, and drill with a drill press.

2 On one edge, 1¼" from the undrilled end, center a mark. Drill a ½" hole straight through the body and both caps at this mark. Use a drill press for accuracy.



FULL-SIZED PATTERN





CUTTING LIST

3/4 x 1/8 x 3 3/4"	Walnut --------2
3/4 x 3/8 x 3 3/4"	Maple ---------2
3/4 x 5/8 x 3 3/4"	Maple ---------2
3/4 x 3/4 x 3 3/4"	Mahogany ---1

BODY BLANKS

CUTTING LIST

3/4 x 1/16 x 3 3/4"	Wenge ---------2
3/4 x 1/16 x 3 3/4"	Maple ----------2
3/4 x 1/4 x 3 3/4"	Wenge ---------2
3/4 x 1/4 x 3 3/4"	Purpleheart --1
3/4 x 3/8 x 3 3/4"	Maple ----------2
3/4 x 5/8 x 3 3/4"	Maple ----------2

3 At the center mark on the undrilled end, drill a ¼" hole into the ½" one.

Shape and finish it

1 Trace the outline from the Full-Sized Pattern onto the kazoo, using transfer paper or carbon paper. Bandsaw or scrollsaw slightly outside the pattern line, then sand down to it.

2 Sand the edge and faces smooth. Then, with a table-mounted router, form a ⅛" round-over all around the top and bottom. Rout with the kazoo standing on its edge, the top or bottom face riding on the bit's pilot bearing.

3 Finish-sand, then apply the clear finish of your choice. After the finish dries, remove the caps.

4 Cut two strips of plastic about ¾" wide and 2" long from a garbage bag, grocery bag, bread wrapper, or the like. Sandwich one piece between the body and the cap on each side where shown. Trim any overhang with a razor blade or sharp knife.

Make something like music

To play the kazoo, purse your lips against the large hole, then buzz or hum. Just blowing won't work. After mastering the basics, which sometimes takes as long as two minutes, you can brighten your performances with techniques such as trills and staccato notes. Once you become a kazoo virtuoso, there's no telling where you can go with your music. Outside, by popular demand is a pretty good guess, though.

Project Design: Robert D. Hutchinson, North Country Dulcimers
Photograph: Wm. Hopkins
Illustrations: Roxanne LeMoine; Lorna Johnson

Collector's Edition FARM

Designed by professional toymaker Steve Baldwin of Omaha, Nebraska, this hard-working little truck pleases children and adults alike. And thanks to the full-sized patterns for many of the parts, it goes together faster than you might imagine. Go ahead, give it a try.

Start with the chassis

1 Cut the chassis (A) to the size listed in the Bill of Materials. Mark the seven centerpoints for the ¼" holes on the *top surface* of the chassis where dimensioned on the Chassis drawing. Using a brad-point bit in your drill press, drill the ¼" holes where marked.

2 Mark the four 5/16" axle-hole centerpoints on the *edges* of the chassis where shown on the Chassis drawing. Drill them 1" deep. We used a large handscrew clamp to hold the chassis steady and square to the drill-press table when drilling the holes. *Don't* drill the ¼" holes for the fenders now.

Laminate the stock and add the hood next

1 Using ¾" and 5/16" stock, laminate the pieces to form the hood blank in the configuration shown on the Hood drawing. Note that the front of the hood is oak and the rest is cherry.

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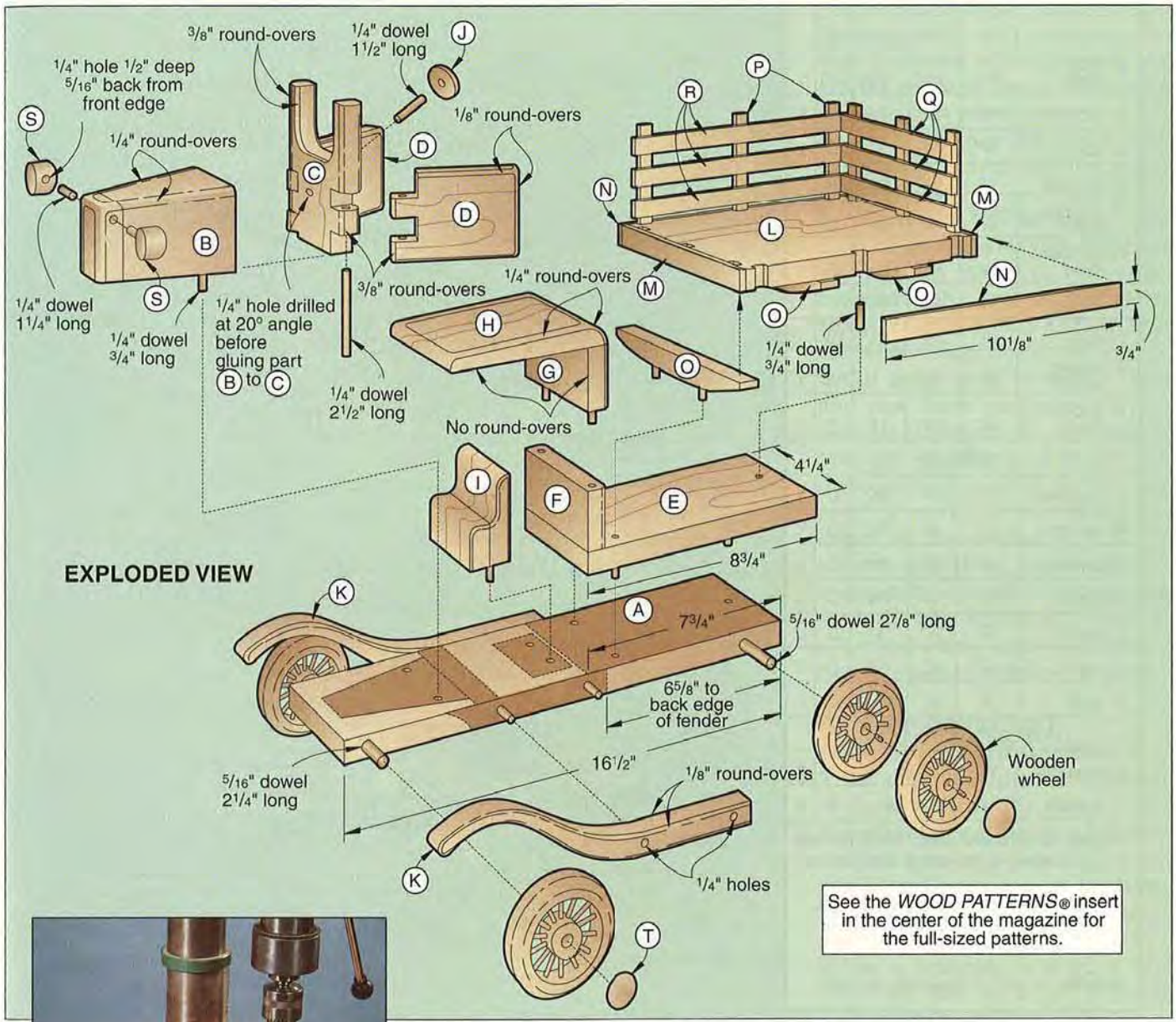
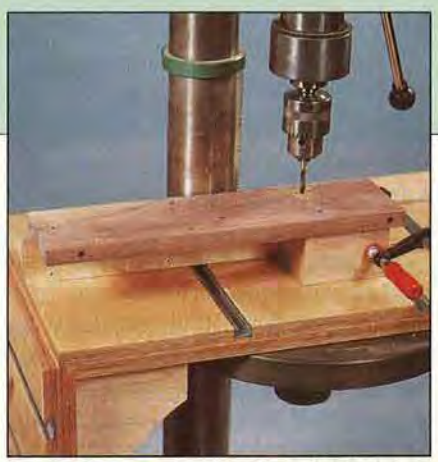
TRUCK





Using the previously drilled front two holes in the chassis as guides, drill mating holes into the bottom of the laminated hood.

2 Mark the location where the hood will sit on the chassis (½" from the front edge and centered side-to-side) where dimensioned on the Chassis drawing. Using double-faced tape, adhere the hood to the chassis. As shown in the photo *at left*, flip the chassis upside down. Then, use the front two ¼" holes previously drilled in the chassis as guides, and drill ¼" holes ⅜" deep into the bottom of the hood lamination.

3 Separate the hood from the chassis. Transfer the full-sized top view pattern from the *WOOD PATTERNS* insert in the center of the magazine to the hood lamination. Next, mark the centerpoints for the headlights on the sides of the hood where located on the Hood drawing. Drill a ¼" hole 1½" deep on each side of the hood blank for the headlight-support dowels. Bandsaw and sand the hood to shape.

Continued

Collector's Edition FARM TRUCK

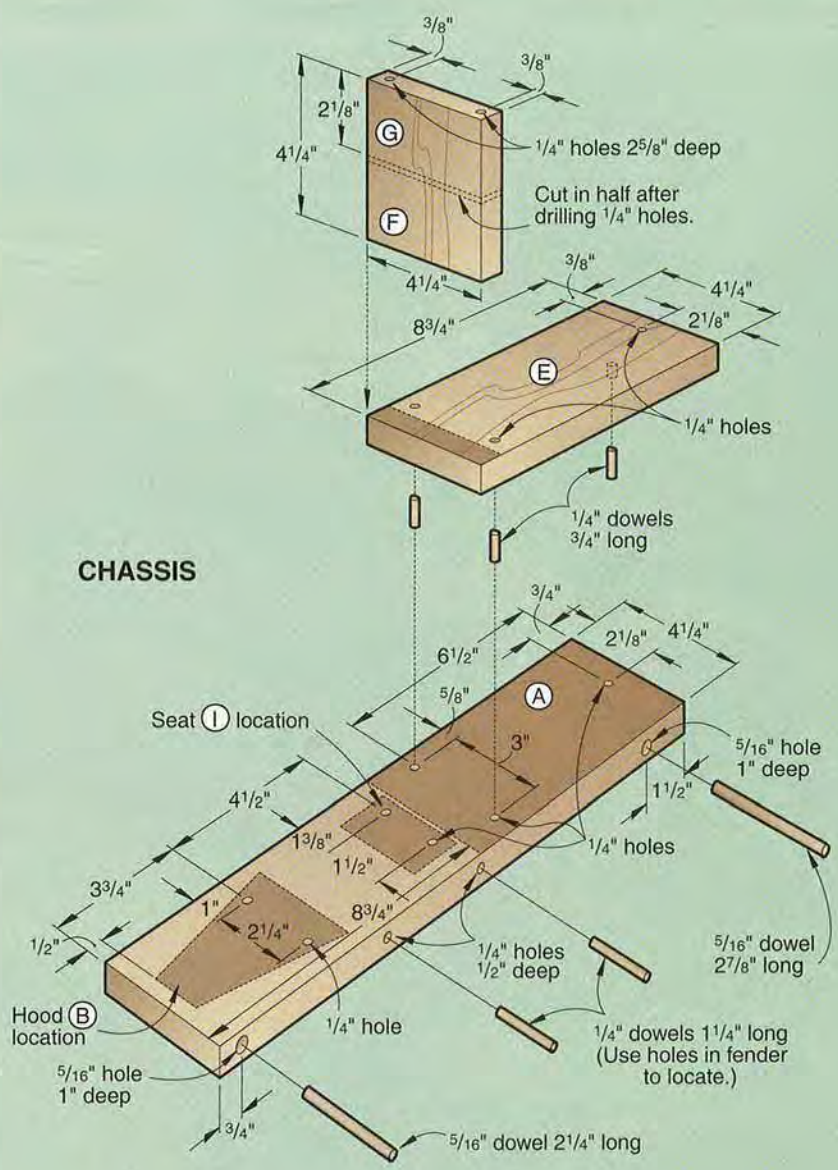
Bill of Materials

Part	Finished Size T	W	L	Matl.	Qty.
CHASSIS AND CAB					
A chassis	¾"	4¼"	16½"	W	1
B hood blank	2⅝"	3⁵⁄₁₆"	4⅛"	C/O	1
C cab front	¾"	4"	4⅞"	C	1
D doors	¾"	2¾"	4"	C	2
E box base	¾"	4¼"	8¾"	W	1
F* cab back bottom	¾"	4¼"	2"	C	1
G* cab back top	¾"	4¼"	2⅛"	C	1
H cab top	¾"	4¼"	5½"	C	1
I seat	1½"	2⅝"	2⅞"	LW	1
J steering wheel	⅜"	1¼" dia.		W	1
K fender blanks	¾"	2¾"	11"	C	2
TRUCK BOX					
L truck bed	¾"	7⅜"	9⅝"	O	1
M box trim	¼"	¾"	7⅜"	O	2
N box trim	¼"	¾"	10⅛"	O	2
O ribs	¾"	¾"	7⅞"	O	3
P stakes	¼"	½"	4"	O	12
Q slats	¼"	⅝"	6⅜"	O	6
R slats	¼"	⅝"	10⅛"	O	6
HEADLIGHTS AND HUBCAPS					
S* headlights	¾"	1" dia.		C	2
T* hubcaps	⅜"	⅞" dia.		M	4

***Initially cut parts oversized. Trim to finished size according to the how-to instructions.**

Materials Key: W–walnut, C/O–cherry and oak, C–cherry, O–oak, M–maple, LW–laminated walnut

Supplies: ¼" and ⁵⁄₁₆" dowel stock, clear finish



4 Rout and sand ¼" round-overs on the hood where shown on the Exploded View drawing. (Since the hood is small and hard to handle, we did the routing on a router table fitted with a fence.)

5 Cut two pieces of ¼" dowel to ¾" long. Sand a slight taper on one end of each dowel. With the tapered ends protruding, glue the dowels into the holes in the bottom of the hood.

Now, for the cab front and swinging doors

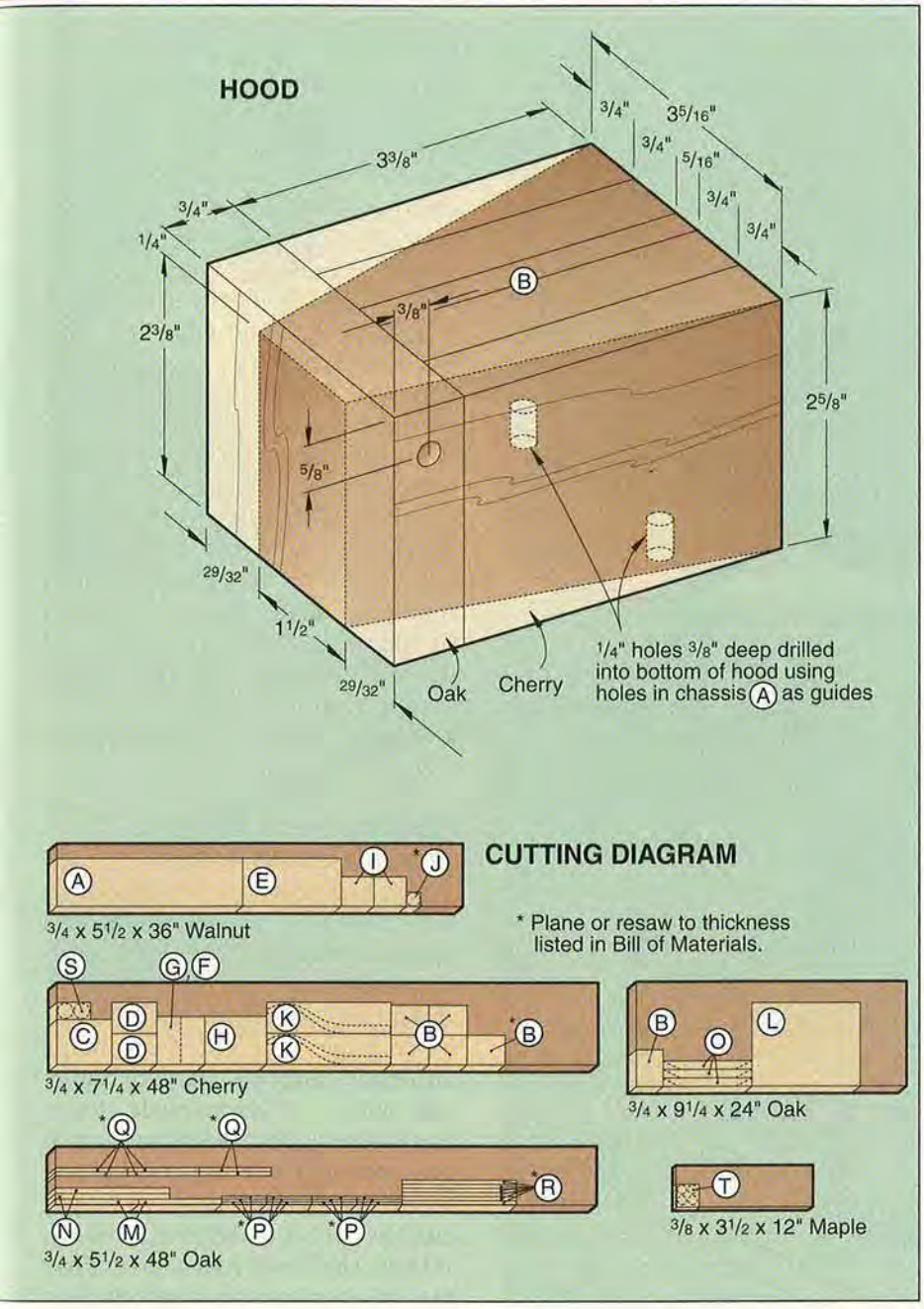
1 Cut the cab front (C) and doors (D) to the sizes listed in the Bill of Materials. Transfer the full-sized patterns to all three pieces.

2 Drill ¼" holes into the bottom of the cab front and doors where marked on the patterns.

3 Rout ⅜" round-overs along the mating edges of the cab and doors where shown on the Exploded View drawing. Rout or sand ⅛" round-overs along the other edges. Now, bandsaw the pieces to shape.

4 Drill a ¼" hole at a 20° angle on the inside surface of the cab front for the steering-wheel dowel.

5 Sand the pieces, and use a pair of ¼" dowels that are 2½" long to hinge the doors to the cab front. (We had to sand our dowels slightly so the doors would swing



easily.) Glue the dowels to the cab front but not to the doors.

6 With the bottom edges flush and the hood centered from side to side against the cab front, glue and clamp the hood to the cab.

Construct the box base and the cab back and top

1 Cut the box base (E) to size. Tape it to the chassis where shown on the Exploded View drawing, and use the holes in the chassis as guides to drill three mating holes in the box base. Separate the pieces.

2 For the rearmost hole in the box base, mark its centerpoint where dimensioned on the Chassis drawing. Drill the hole.

3 Cut a piece of ¾" cherry to 4¼" square. Later you'll crosscut this piece in two to form the cab back bottom (F) and cab back top (G) where shown on the Chassis drawing. Drill a pair of ¼" holes 2⅝" deep into the piece where shown on the Chassis drawing. Drilling the holes now ensures that the holes will align after you cut the piece in two. Crosscut the piece in two where shown.

4 Cut the cab top (H) to size. Glue and clamp the cab top to the cab back top (G).

5 Adhere the full-sized side view pattern of the cab top (H) from the pattern insert to one edge. Bandsaw the top of part H to shape. (Part G makes a handy handle when doing this.)

6 Cut a pair of ¼" dowels ¾" long and glue them into part G so the dowels protrude ⅜" and will fit into part F. Slide part F onto the dowels and against G. Sand or rout ¼" round-overs along the edges of the assembly (F, G, H) where noted on the Exploded View drawing. Sand the assembly smooth, and separate F from G. Glue and clamp part F to the top front surface of the box base (E).

Add the contoured seat and steering wheel

1 Laminate two pieces of walnut to form a blank for the seat (I). Transfer the seat pattern from the pattern insert to one end of the blank, and cut the seat to shape. Sand the seat smooth, and add a pair of dowels to it.

2 Use a compass to mark a 1¼"-diameter disc on a piece of ⅜"-thick walnut stock for the steering wheel (J). Drill a ¼" hole through the center of the disc, and then cut and sand it to shape.

3 Cut a piece of ¼" dowel to 1½" long, and glue it to the steering wheel (J).

A pair of shapely fenders come next

1 Cut two pieces of ¾" cherry to 2¾" wide by 11" long each for the fender blanks (K). Using double-faced tape, adhere the pieces face-

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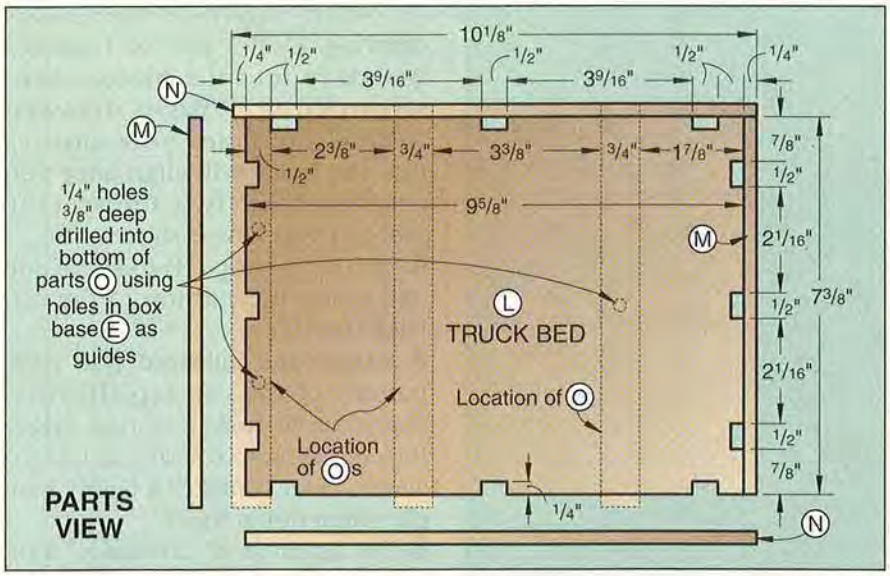
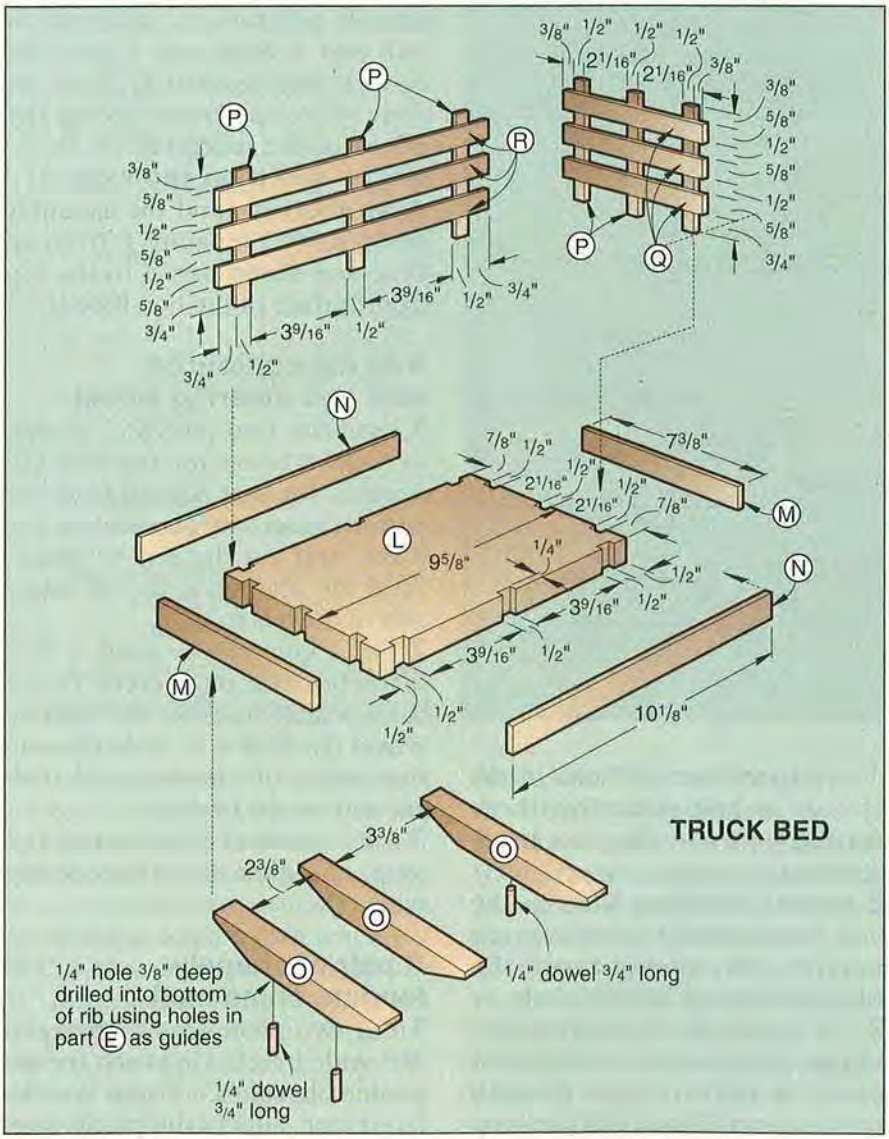




to-face, with the edges and ends flush. Adhere the full-sized fender pattern to one face of one piece.

2 Drill a pair of ¼" holes through both pieces where marked on the pattern. Stick a ¼" dowel through each hole to hold them flush. Bandsaw the pieces to shape to form the fenders.

3 With the fenders still taped together, sand the edges smooth to remove the saw marks. Separate the pieces and remove the tape.

4 Clamp the fenders to the chassis 6⅝" from the back edge where shown on the Exploded View. Using holes in the fenders as guides, drill ¼" holes ½" deep into the edges of the chassis as shown in the photo *at right.* Glue ¼" dowels 1¼" long into the chassis for supporting the fenders.

5 Sand ⅛" round-overs along each edge of each fender.

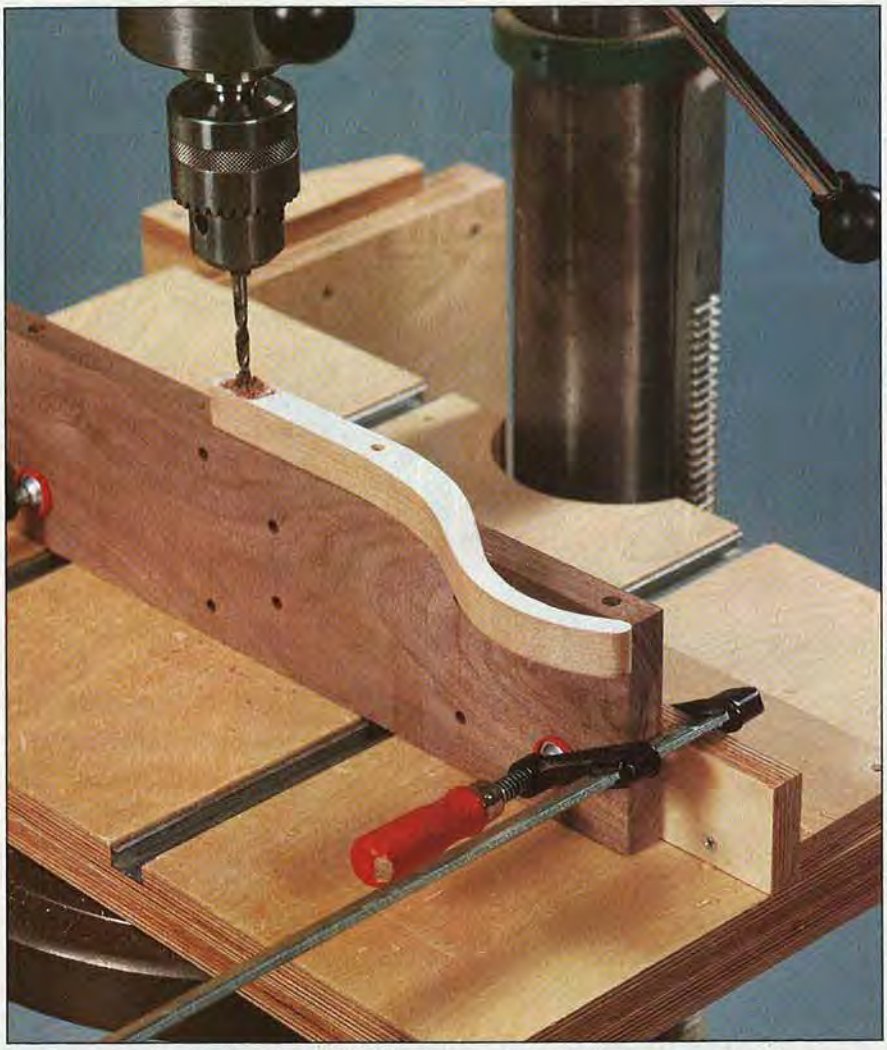
Add the truck bed and rails for heavy loads

1 Cut the truck-box bed (L) to size. Transfer the dimensioned notches from the Truck Bed drawing to the bed.

2 Add a 4"-tall extension to your miter gauge. The extension helps minimize chipout. Fit your tablesaw with a ½" dado blade. Raise the blade ¼" above the surface of the saw table. Supporting the truck bed against the extension, cut the notches where marked. (Since the notches are evenly placed, we used a stop on our miter-gauge extension, enabling us to cut several notches using the same setting.)

3 From the edge of ¾" oak stock, rip the bed trim strips (M, N) to ¼". Crosscut the bed front, back, and side trim pieces to length, and glue them to the bed (L).

4 Transfer the full-sized pattern, and cut three box ribs (O) to shape. Glue the ribs to the bottom of the bed where shown on the Parts View drawing.



Tape the fenders to the chassis. Then, using the existing holes in the fenders as guides, use your drill press to drill mating holes in the chassis.

5 With the front edge of the bed (L/M) 1/16" from the back edge of the cab back (F) and centered side-to-side, clamp the two pieces together. Using the three previously drilled holes in the box base (E) as guides, drill 1/4" holes 3/8" deep into the ribs (O).

6 Cut three pieces of 1/4" dowel to 3/4" long each, sand a taper on one end of each, and glue the dowels in place in the ribs and box base.

7 Now, cut the box stakes (P) and slats (Q, R) to size. Sand the stakes so they fit easily into the notches in the truck bed (L). Glue the four assemblies together, being careful to align the stakes with the notches in the truck bed.

And finally, the headlights and hubcaps

1 To make the headlights (S), cut a piece of 3/4" cherry to 1 1/2" wide by 3" long. See the *WOOD PATTERNS®* insert for reference.

2 Mark the locations, and drill a pair of 1/4" holes 1/2" deep.

3 Bandsaw (we used a 1/16" blade) the headlights to shape from the block. Then, hand-sand the back side of each headlight to the shape shown on the pattern.

4 Cut a pair of 1/4" dowels 1 1/4" long. If children under the age of three will be playing with the finished truck, we recommend gluing the headlights in place. It eliminates the chance of a small child swallowing them. For older children or for a display/puzzle model, leave the headlights removable from the hood.

5 To form the hubcaps (T), plane maple stock (bird's-eye looks great) to 3/8" thick. Use a compass to mark four 7/8"-diameter circles on the 3/8" stock. Now, drill a 5/16" hole 1/4" deep at each centerpoint left by the compass. Finally, cut the hubcaps to shape.

6 Crosscut four pieces of 5/16" dowel stock to the lengths (2 7/8" and 2 1/4") for the wheel axles shown on the Exploded View drawing. Glue a hubcap onto one end of each piece of dowel. Using the dowel as a handle, sand the outside surface of each hubcap to the shape shown on the pattern.

7 Finish-sand all the pieces, and add the finish, being careful not to get finish into the dowel-mounting holes.

Buying Guide

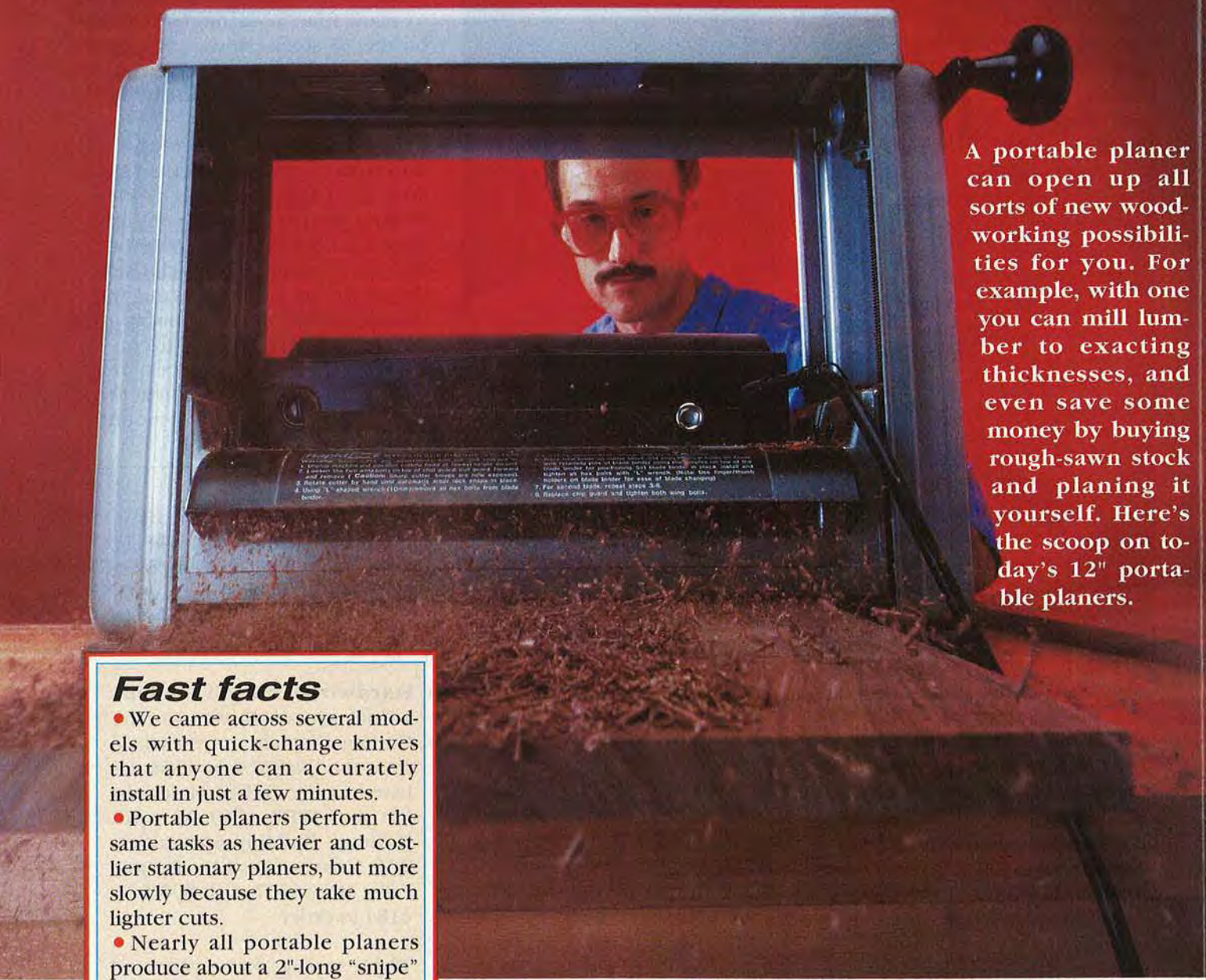
Spoked wheels. Six 1 3/16×3 1/2"-diameter, #508 spoked wheels. Key #WD1096, $15.95 ppd. Cherry Tree Toys, Inc., P.O. Box 369, Belmont, OH 43718 or call 800/848-4363 to order.

Hardwood kit. All the individual pieces shown on the Cutting Diagram cut oversized from the thickness and species listed in the Bill of Materials. Kit no. W92, $39.95 ppd. Heritage Building Specialties, 205 North Cascade, Fergus Falls, MN 56537. Call 800/524-4184 to order.

Toy catalog. For a plan and kit catalog of other toys from the designer of this project, send $3 to Baldwin Toy Company, P.O. Box 37014, Omaha, NE 68137-0014.

Written by Marlen Kemmet
Project Design: ©Steve Baldwin
Illustrations: Roxanne LeMoine; Lorna Johnson
Photographs: Wm. Hopkins; John Hetherington

12" PORTABLE PLANERS



A portable planer can open up all sorts of new woodworking possibilities for you. For example, with one you can mill lumber to exacting thicknesses, and even save some money by buying rough-sawn stock and planing it yourself. Here's the scoop on today's 12" portable planers.

Fast facts

- We came across several models with quick-change knives that anyone can accurately install in just a few minutes.
- Portable planers perform the same tasks as heavier and costlier stationary planers, but more slowly because they take much lighter cuts.
- Nearly all portable planers produce about a 2"-long "snipe" on the ends of boards. But, we show you ways to deal with this problem.
- Machines with smooth, flat tables, and extension tables that don't flex, produce the best results with the least adjustment headaches.

We tested these planers

For this article we focused on popular models with 12"-long knives (meaning they will plane boards up to 12" wide). Most sell for $400 or under, including the Delta 22-540, Grizzly G1017, Jet JWP12-4P, Ryobi AP12, and Tradesman 8312, as well as the essentially identical AMT 4651, Bridgewood BW-12P, and Central Machinery 06469-7SFA (available from Harbor Freight). And, we included the Delta 22-560 ($450), Makita 2012 ($500), and Hitachi P12R ($795).

Today's models are space saving and priced right

How portables compare to stationary planers

For the typical home woodworker, purchasing a portable planer makes a lot of sense. Most are affordable, and all of them will handle occasional thicknessing tasks for years to come. They're lightweight (53-80 pounds), so you can stow them away to save space, or take them to any worksite with 110-volt power. Their rapid (and noisy) universal motors turn a two-knife cutterhead at 8,000-8,500 rpm, producing smooth cuts in nearly any wood (with sharp knives, of course). But, they're not for everybody.

If you plan to make heavy use of a thickness planer, such as planing 100 board feet or more of rough-sawn stock at a time, then you ought to focus on a stationary planer. These machines typically weigh several hundred pounds, and have 220-volt induction motors of at least 2 hp that help the cutterhead plow through deep cuts. So, planing the same pile of lumber that may take a half hour with a stationary planer may require several hours with a portable planer. And, such heavy work will quickly wear out a portable planer, but stationary planers will handle years of such work on a daily basis.

Most stationary planers have three or more knives at least 15" long for handling wider stock. The least expensive, Taiwanese-made stationary planers start at about $700, but they don't have quick-change knives. Prices go up from there.

What we found on our snipe hunt

For years we've heard from readers wanting to know how to cure the "snipe" produced by their portable planers. Snipe refers to the slightly deeper cuts on both the infeed and outfeed ends of a planed surface. The sniped area is typically about 2" long—the distance between the centers of the cutterhead and the feed rollers.

Snipe occurs because the infeed roller and cutterhead combine to lift the infeed end of the workpiece, causing the cutterhead to remove more stock until the outfeed roller presses the piece flat against the planer bed. Similarly, as the piece exits the machine, the infeed roller loses contact with the workpiece, and the cutterhead and outfeed roller combine to lift the exiting end into the cutterhead. All portable planers produce some snipe because their construction just isn't rigid enough to completely withstand the forces of their own feed rollers and cutterheads.

Prior to our testing, we minimized each machine's sniping action by carefully making all possible adjustments to its cutterhead, feed rollers, knives, and tables (just as any buyer should do). Only the Makita and Hitachi units required no adjustment, and produced nearly snipe-free results out of the box. Then, we measured the snipe depth produced on a perfectly true workpiece (warped stock will contribute to increased sniping).

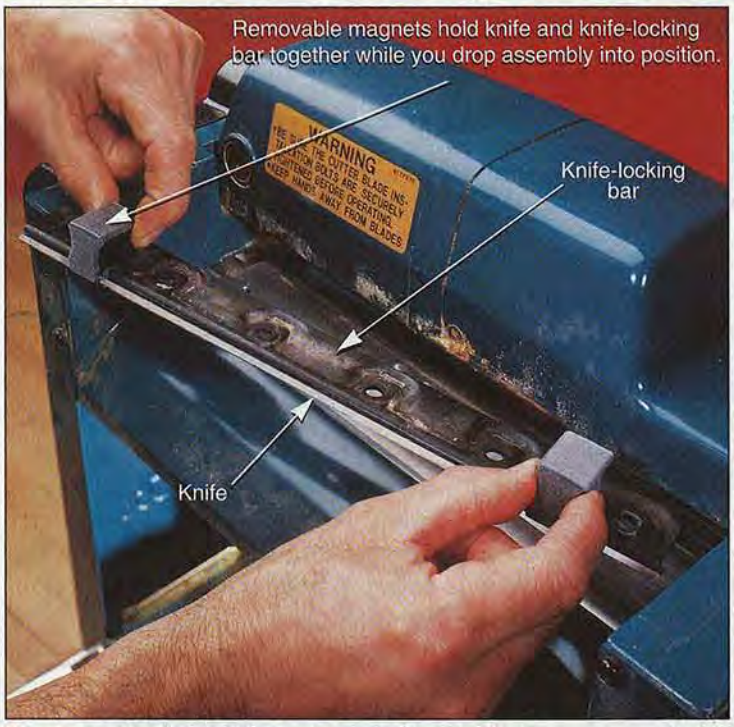
As you can see in the chart at the end of this article, the amount of snipe ranged from .0005" to .006" deep. That may not seem like much snipe, but we could easily see and feel any snipe deeper than .001". We found that .001" sniping required light sanding by hand or with a palm sander, and .002" sniping called for an aggressive random-orbit sander. Any sniping

Continued

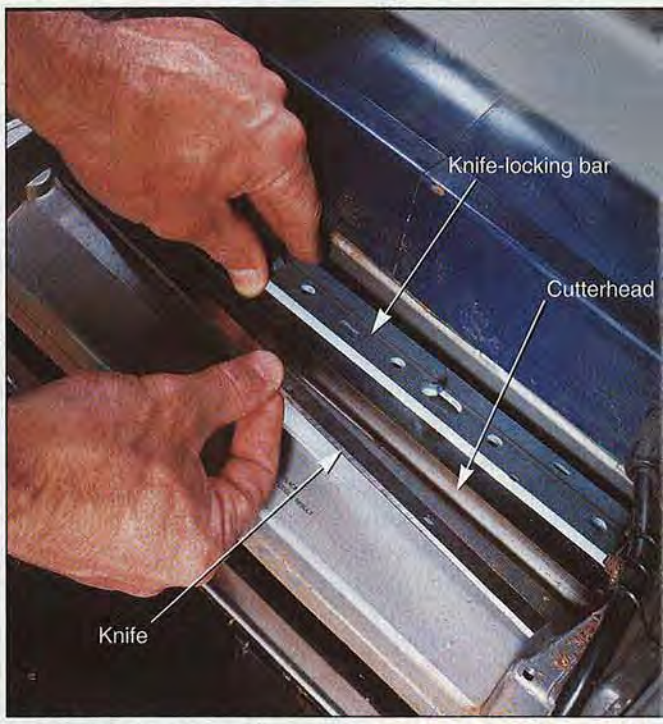
Quick ways to minimize sniping

If you've made all of the necessary adjustments to your planer, and you're still getting snipe, even with true stock, don't give up hope! Here are some things you can do to win the war against snipe:

- As much as possible, plane your rough boards to final thickness *before* you cut individual workpieces to finished length. Then, the snipe may possibly fall on a checked or split end that you would remove as waste anyway.
- Take light cuts. The deeper the cut, the deeper the snipe, so take light finishing cuts as you near the final thickness.
- Raise the outside ends of your extension tables just a few thousandths of an inch above the main table. You'll have to experiment to find the height that best minimizes snipe.
- Butt your boards end-to-end as you plane them. Then, the snipe will occur only on the front end of the first piece and the back end of the last piece. If you want no snipe whatsoever, or you're planing only one board, butt scrap pieces of the same thickness and at least 10" long against the board ends. The scrap pieces will be sniped, not your good board.


Removable magnets hold knife and knife-locking bar together while you drop assembly into position.
Knife-locking bar
Knife

After slipping the Makita knife under its locking bar, you need only align its groove with a ridge on the locking bar.



The quick-change Ryobi knives work like the Makita's, but have oval holes for alignment with the locking bar.

.003" or deeper required that we cut off the sniped area if the workpiece was destined for a visible spot in a project.

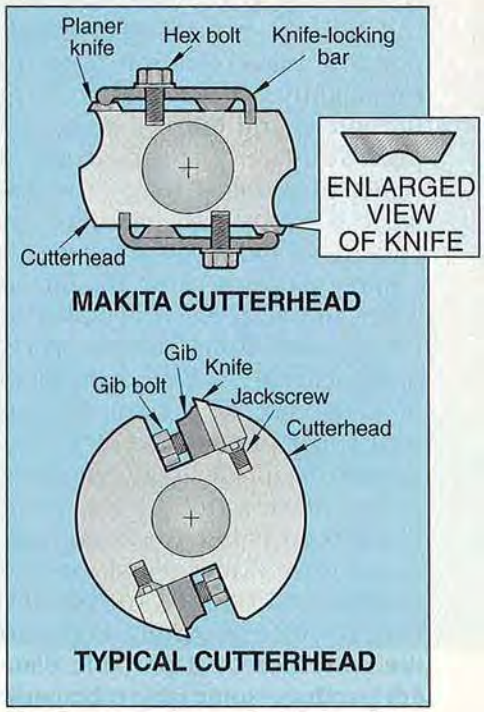
Some knives change much quicker than others

Three of the tested machines—the Delta 22-560, Makita, and Ryobi—have quick-change knives that we found easy and accurate to install. As shown *above*, these quick-change systems feature double-edged, disposable knives with built-in self-alignment features. Each Makita knife has a full-length groove that aligns with a ridge in a bar that locks the knife to the cutterhead (see *top* of illustration *right*). The Delta and Ryobi systems are similar, with oval-shaped holes in each knife that fit onto pins on the locking bar.

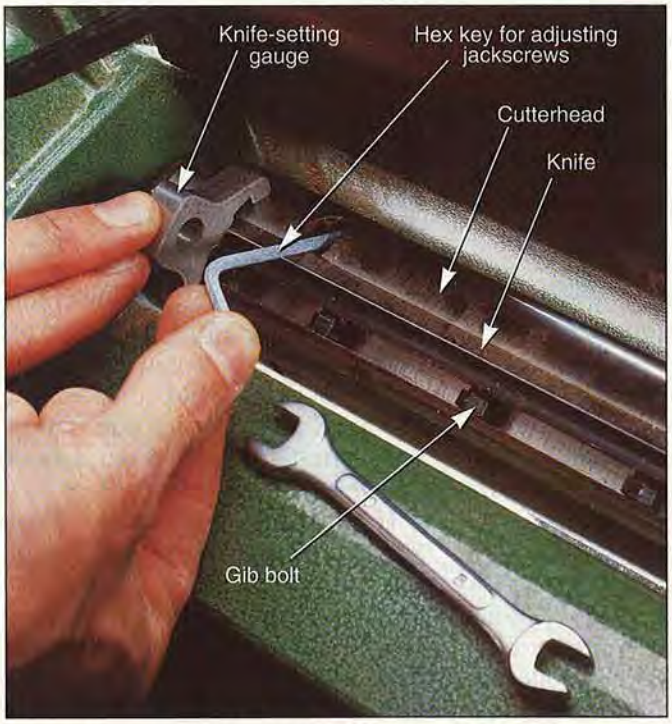
We found that with the quick-change systems we aligned the knives accurate to within .001". And, we could install both knives in about five minutes. With both quick-change systems you can shift the knives slightly if you accidentally nick them while planing.

On the other hand, the AMT, Bridgewood, Central Machinery, Delta 22-540, Grizzly, and Jet units require at least a half hour for two knife changes, provided you have experience with such setups. Why so long? As shown in the *top left* photo on the *opposite page*, these machines require that you use a hex key to adjust each knife up or down until it contacts a small gauge (the Delta has springs instead that lift the knife up to the gauge). Then, you tighten a row of gib bolts to lock the knife in place. Unfortunately, tightening the gib bolts tends to shift the knife up or down, requiring you to repeatedly loosen the bolts, readjust the knife, and retighten the bolts. The drawings *right* show the differences between one of these typical cutterheads and a quick-change cutterhead such as the Makita.

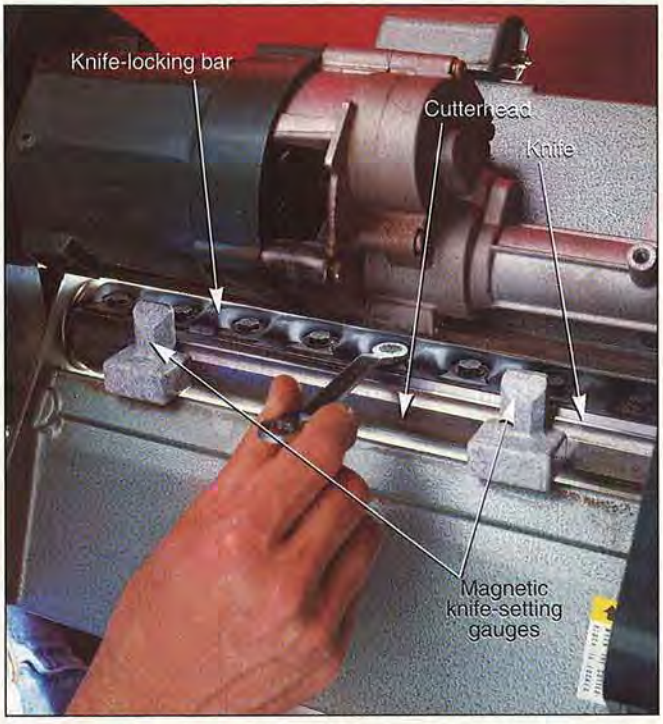
Like the Delta 22-560, Makita, and Ryobi, the Hitachi and



Tradesman have knife-locking bars instead of gib bolts. But, the knives don't self-align—you still have to use a gauge as shown in the photo *top right, opposite page*. In terms of convenience and accuracy, we rank this setup just



Like most planers, the Grizzly G1017 has the traditional and time-consuming gib-bolt system for securing knives.



The Hitachi requires knife-setting gauges, but its locking bar doesn't shift the knives as gib bolts tend to do.

below the self-aligning systems, but well ahead of the gib-bolt setup. It is the ideal setup if you prefer resharpenable knives to disposable (see *next* section).

Disposable knives: Are they a good deal?

Both Deltas and the Jet, Makita, and Ryobi planers have narrow, disposable knives with two sharp edges. When one edge dulls you simply reverse each knife. When the next edge dulls, you toss the knives out. A set of two of these knives costs $25-$30, about the cost of having a typical two-knife set sharpened twice.

We like these disposable knives for two reasons. First, there's no downtime when your knives dull—you just reverse the knives or buy a new set. (With typical knives you need an extra set on hand so you can run the planer while your resharpener has the knives.) And, many woodworkers do not have access to a qualified sharpening service in their area.

With that said, a traditional set of knives may make more sense for you if you have the equipment and skill to hone or resharpen your own knives. (It is not practical or advisable to sharpen disposable knives.)

More points to consider

•Changing cutting depth

Most of the machines require about 75 crank rotations to elevate their tables completely. The Makita makes this easier on your arm by needing only 38 rotations. The Delta 22-560 is between these extremes, needing 58 crank rotations for full elevation. The Tradesman needs only 50 rotations, but the elevating mechanism bound up when we tried to adjust it for 5"- to 6"-deep cuts.

•The main tables

The planers in our test have two types of main tables: smooth and flat metal sheet, or cast-aluminum with rollers (see photos *right*). We prefer the smooth and flat

Continued

The Hitachi has a perfectly smooth and flat table that requires no adjustment.

Like the similar Central Machinery and AMT planers, the Bridgewood has table rollers that we found difficult to adjust.

type found on the Deltas, Grizzly, Jet, Hitachi, Makita, Ryobi, and Tradesman. That's because we found the main-table rollers tricky to adjust to the right height and parallel to the cutterhead. And, we've seen these types of rollers seize up from sawdust contamination over time.

•Extension tables
Here, too, you will find two basic types: smooth and flat, or with rollers. We don't favor one type over the other, but we did find that a few of the roller types flex as much as ¼" under pressure. As noted in the chart *right*, three similar machines received a "poor" rating under the heading "lack of extension-table deflection."

•Two approaches for getting up and down
Most of the tested planers have stationary main tables and cutterheads that elevate up and down. These hold a small advantage if you plan to use roller stands or bench surfaces to support long boards during infeed and outfeed. That's because you don't have to change the height of the support as you work.

Only the Hitachi and Makita have stationary cutterheads and elevating tables. Since these machines produced less snipe than most of the other tested machines, we suspect that it may have something to do with the rigidity of the stationary cutterheads. Given a choice, we'll opt for less snipe over the convenience of stationary infeed and outfeed supports.

•Dust collection
Like their big, stationary brothers, portable planers produce mounds of sawdust in no time at all. So, we were disappointed that none of the tested units includes a dust-collection hood as standard equipment. For all but the Makita, you can buy hoods that connect to shop vacuums (2¼" port), or dust collectors (4" port). The optional Makita hood has a 3" port for connection to a Makita dust-collector hose. Optional dust-collection hoods range in price from $20 to $40. Or, you can fashion your own from ⅛" plywood. We show how in issue 43, *pages 48-49*. If you don't have a copy of this article, we'll be happy to mail you one. Send $4 and a stamped, self-addressed envelope to:
Dust hood article
WOOD® Magazine, GA310
1912 Grand Avenue
Des Moines, IA 50309-3379

•Portability
The Makita is a hands-down winner here with the lowest weight in the test (53 pounds) and easy-to-grasp carrying handles. If you plan to move your planer around a good deal, think twice before buying any planer weighing more than 70 pounds.

Our recommendations

The Hitachi was the best machine, but it wasn't $300-$500 better than the others. If you have $800 to spend, you should consider one of the 15" Taiwanese-made stationary planers available from a number of importers.

If you can afford the $500 Makita, you won't be disappointed. Its blades are a cinch to change, it snipes very little, and it's the lightest tool in the bunch.

For about $50 less, the Delta 22-560 performs as well as the Makita, has a bit more power, but weighs 12 pounds more.

The hottest battle among portable planers is being waged at the $400 price point. Here, three machines excel. The Ryobi AP12 stands out because it has quick-change knives. We like the Grizzly because it produced less snipe than the other machines in its price range. The Jet performed like the Grizzly and weighs less.

The budget-conscious should consider the Central Machinery unit. At only $300 you may be willing to overlook its sniping.

PLANE FACTS ON TODAY'S PORTABLES

MANUFACTURER/ IMPORTER	MODEL	ELEVATION: HEAD (H) OR TABLE (T) ELEVATES	ELEVATION: STABILITY MECHANISM (1)	ELEVATION: ROTATIONS FOR FULL ELEVATION	OPTIONAL DUST-COLLECTION PORT SIZE (INCHES)	MAIN-TABLE ROLLERS (Y) YES, (N) NO	SNIPING (DEPTH, INCHES): INFEED	SNIPING (DEPTH, INCHES): OUTFEED	PERFORMANCE (2): EASE OF KNIFE CHANGES (3)	PERFORMANCE (2): EASE OF ADJUSTING CUTTERHEAD PARALLEL TO MAIN TABLE (4)	PERFORMANCE (2): LACK OF EXTENSION-TABLE DEFLECTION (5)	PERFORMANCE (2): CONSTRUCTION QUALITY	PERFORMANCE (2): ELEVATING EASE	PERFORMANCE (2): PORTABILITY	WEIGHT (POUNDS)	WARRANTY (YEARS) (6)	COUNTRY OF ASSEMBLY (7)	SELLING PRICE	COMMENTS
AMT	4651	H	FS	75	NONE	Y	.004	.004	F	G	P	G	G	G	67	*	T	$355	Standard-issue Taiwanese portable planer similar to Bridgewood, Central Machinery, and other brands. Good results possible, but bed rollers require careful adjusting, and extension tables flex easily.
BRIDGEWOOD	BW-12P	H	FS	75	2¼	Y	.004	.004	F	G	P	G	G	G	64	1	T	390	See AMT 4651 comments.
CENTRAL MACHINERY	06469-7SFA	H	FS	75	2¼	Y	.006	.004	F	G	P	G	G	G	66	***	T	300	Has a lower price than similar models sold by AMT and Bridgewood.
DELTA	22-540	H	SR	75	4	N	.006	.003	F*	E	E*	E	G	F	68	2	T	390	Features sturdy, four-post construction. Snipe was hard to control because of extension tables that rest on work surface.
	22-560	H	SR	58	4	N	.002	.001	E*	G	E	E	E	G	65	2	T	450	This new model features solid construction and a cutterhead lock that reduce snipe to a minimum. Has quick-change, double-edged knives.
GRIZZLY	G1017	H	SR	75	2¼	N	.002	.002	F	G	E	E	G	F	80	1	T	395	Heavy and sturdy. Least snipe of machines in its price range.
HITACHI	P12R	T	SR	75	4	N	.002	.0005	G*	*	E	E	E	F	74	1	J	795	If you have the money, here's your machine. One of the easiest blade-changing systems we have seen for reusable blades on any planer at any price.
JET	JWP 12-4P	H	SR	78	2¼ 4	N	.003	.002	F	G	E	G	G	G	68	1	T	400	The newest Taiwanese portable planer being sold by a number of importers. Similar models also currently available from Star Tools and Sunhill.
MAKITA	2012	T	LS	38	3	N	.002	.001	E*	G	E	E	E	E	53	1	J	500	Quick blade changes, minimal snipe, low weight, and solid construction made this one of our favorite machines to use.
RYOBI	AP12	H	FS	75	2¼	N	.004	.004	E*	G	E	E	G	G	63	2	T	390	A solid machine in all respects with the easiest blade changes of similar-priced thickness planers.
TRADESMAN	8312	H	LS	50	2¼	N	.004	.004	G*	G	G	F	F	G	75	**	T	400	A solidly constructed machine with reusable blades that change easily. The cutterhead-elevation mechanism binds up with stock thicker than 5".

NOTES:

1. (SR) Four steel rods
   (LS) Two lead screws
   (FS) Formed steel sides
2. E Excellent
   G Good
   F Fair
   P Poor
3. (*) Manufacturer's knives required.
4. (*) Table is fixed parallel with cutterhead.
5. (*) Extension tables rely on rigidity and flatness of surface supporting the planer.
6. (*) One year for the motor, ten years for the rest of the machine.
   (**) One year for labor, five years for parts, one year for the motor.
   (***) One year for machine, 90 days for motor.
7. (J) Japan
   (T) Taiwan

Manufacturers' phone numbers:

AMT 800/435-8665
Bridgewood 800/235-2100
Central Machinery (Harbor Freight) 800/423-2567
Delta 800/438-2486
Grizzly (West of the Mississippi) 800/541-5537
(East of the Mississippi) 800/523-4777
Hitachi 800/362-7297
Jet 800/274-6848
Makita 714/522-8088
Ryobi 800/525-2579
Star Tools 888/678-8777
Sunhill 800/929-4321
Tradesman 800/243-5114

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1996 WOOD MAGAZINE EDITORS' CHOICE TOP VALUE
Jet JWP12-4P
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Makita 2012
1996 WOOD MAGAZINE EDITORS' CHOICE TOP VALUE
Ryobi AP12
Tradesman 8312

Written by Bill Krier Technical consultant: Bob McFarlin Photographs: Wm. Hopkins; John Hetherington; Bob Willits

Crafts-fair marketing:

10 WAYS TO BOOST YOUR SALES

Crafts fairs may be the ticket to sell your woodworking creations. But just showing up at one doesn't guarantee your success.

The first stop for many woodworkers who sell their work is a crafts fair. Some keep successfully selling at fairs for years. Others get discouraged and quickly give up. Success depends on many things, from your personality to the economy. The following tips should improve your luck regardless of other factors.

1 Strive for mass appeal.

You may dream of selling those $500 or $1,000 items, but most crafts-fair sales actually fall in the $15 to $75 range. Rude Osolnik of Berea, Kentucky, one of the nation's foremost woodturners, has sold plenty of bowls for three and four figures. But when selling at crafts fairs, he also needed such lower-priced items as candlesticks and weedpots.

2 Remember, it's a "show."

Knowledgeable crafters don't call crafts fairs "shows" for nothing. For instance, Greg Adams of Muncie, Indiana, makes some of his willow furniture while he's exhibiting at fairs. His work always draws a crowd.

3 Display like a retailer.

A wide selection is great. Clutter isn't. Take a consumer's-eye view of your booth. Buy or build vertical display fixtures to get more pieces in your booth. Veterans say that a good-looking booth can account for 25% of sales.

4 Emphasize your craft specialty.

Concentrate on what you do best and show it off. Take Norm Sartorius of Parkersburg, West Virginia. He makes elegantly crafted spoons, and strictly sticks with them (along with a smaller selection of lower-priced letter openers to boost sales volume).

5 Show how to use or display your product.

Spoonmaker Sartorius helps his customers understand exactly what to do with his sculpted products by displaying them in a hutch as buyers might do in their homes.

6 Be attentive, not pushy.

Crafts-fair shoppers don't want a sales pitch. On the other hand, you can't just sit there and ignore them. Be alert, and answer questions when someone lingers. At such times, bring up any interesting information you can about what you make.

7 Spread the word.

Keep business cards and/or brochures visible. To encourage repeat purchases, give everyone who buys something a card, too. Wrightsville, Pennsylvania, Windsor-chair maker Bill Wallick doesn't sell many chairs at shows, but generates business through the cards that he distributes at crafts fairs.

8 Tell a story.

If there's a special story about how you made a piece, put it on a card (with photos, if possible) or an information sheet next to the piece. Display newspaper or magazine articles written about you and your work. Even a simple card telling about the wood species you used in a piece can help stimulate a sale.

9 Gather names.

Build a mailing list by keeping a guest book for customers to sign. Better still, raffle off a piece of your work, collecting names, addresses, and telephone numbers from everyone who enters. You also should record this same information off customers' personal checks.

10 Accept credit cards.

Taking plastic gives you a professional look, plus helps you ensure sales from those who don't happen to have a check or enough cash on hand. Of course, you'll pay a transaction fee, but increased sales should compensate. You can obtain vendor status through membership in some groups, such as the American Craft Council.

An inviting booth exhibit is one of the secrets to success at crafts fairs.

Written by Jack Neff, a Batavia, Ohio, business writer and author of the book *Make Your Woodworking Pay for Itself.* Illustration: Jim Stevenson

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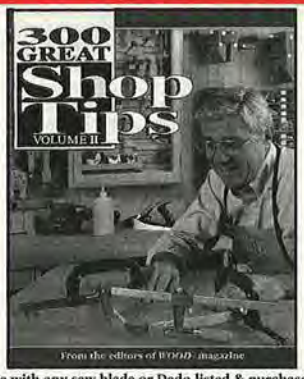

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WOOD® Magazine test, Sept. '93, pg. 45

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Ryobi–Makita & all 10"x80Tx5/8"	$207	$129
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>
> P. Rose, PA

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>
> I also am going to send you my old Craftsman blade to sharpen. I'm not satisfied with our local sharpening. Now, how to justify another one of your blades.... because I don't ever want to be without one.
>
> Rick Price

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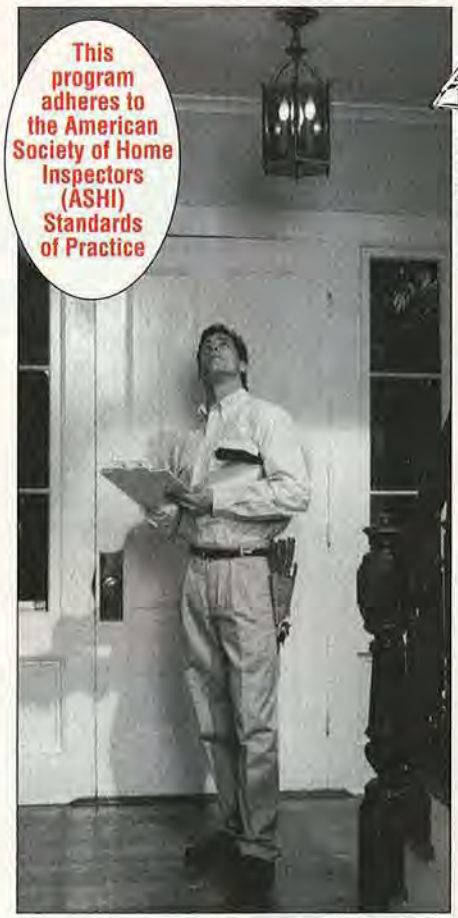

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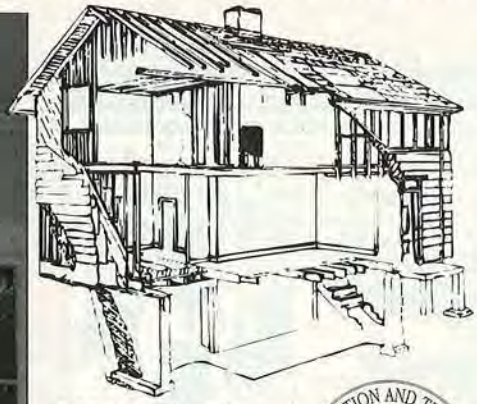

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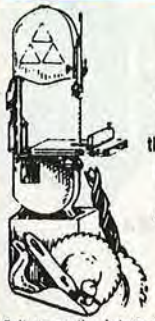

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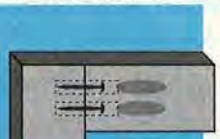

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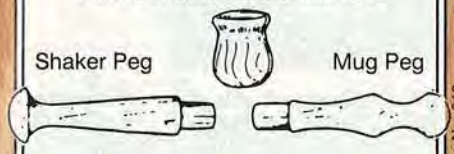

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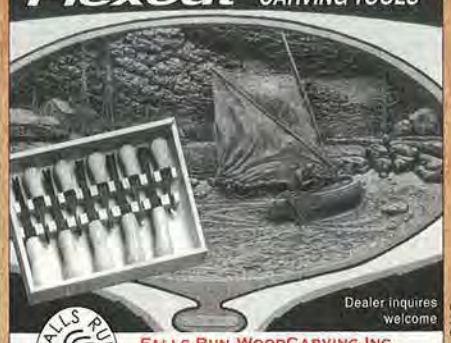

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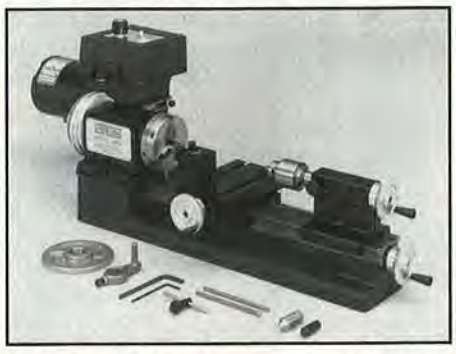

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Delta's B.O.S.S.—a smooth, clean operator

The new Bench Oscillating Spindle Sander (B.O.S.S.) from Delta not only tops other benchtop spindle sanders priced under $200 for smooth, quiet operation, but it cleans up after itself as well. Thanks to an efficient, built-in dust collection system, the B.O.S.S. allows you to sand without the high-pitched whine of a shop vacuum.

The folks at Delta mounted a fan on the drum spindle just below the table. The fan pulls air downward, and a plastic housing directs the air into a dust collection bag at the back of the machine. Radial slots in the steel table inserts allow good air flow, yet still support the work piece. I found that the system did a good job of pulling in all airborne dust, and left only small amounts of dust on the table when I sanded pitch-laden pine. You also can connect a vacuum to the 1½"-port if you want extra suction.

A ¼-hp direct-drive induction motor, turning at 1725 rpm, provides smooth, quiet power to the spindle. The entire motor and spindle assembly rides up and down ⅞" to provide a steady 60 oscillating strokes per minute without any noticeable spindle deflection.

A large 18"-diameter cast iron table provides a stable work platform, although the surface finish could have been a little smoother. The B.O.S.S.'s 47-pound weight, combined with the smooth-running motor, make it virtually vibration-free.

The B.O.S.S. comes standard with a ¾×4½" drum and matching steel table insert. A ½"-diameter sleeve also will fit directly over the spindle. Options include set of 1"-, 1½"-, 2"-, and 3"-diameter drums and inserts (shown in photo) for about $65 and a metal stand for $60. Holes and slots in the base provide onboard storage for drums, sleeves, inserts, and wrenches.

—Tested by Dave Henderson

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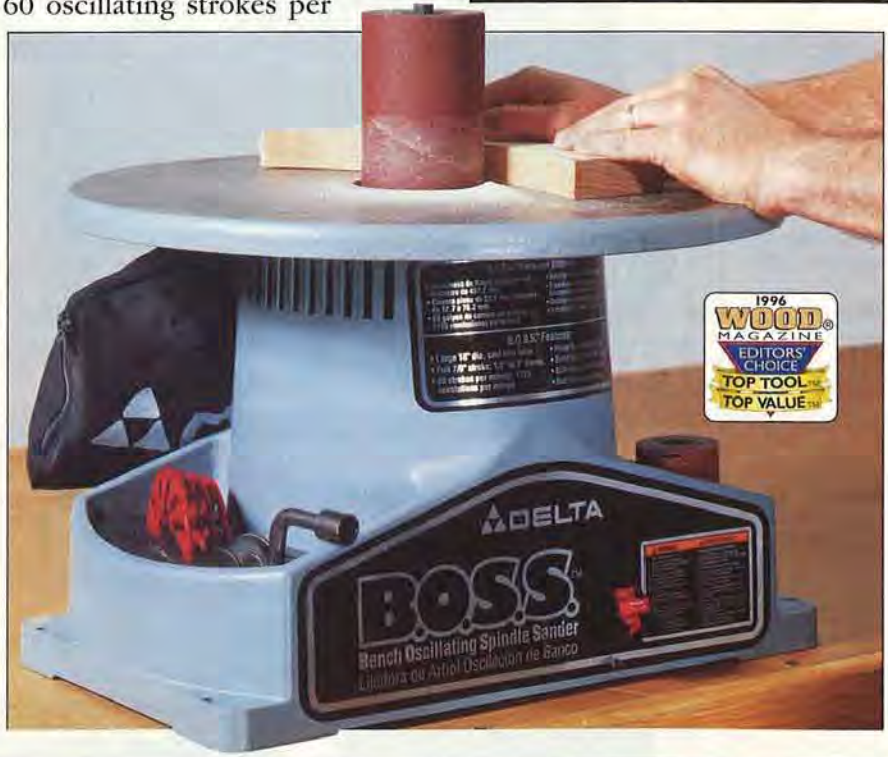

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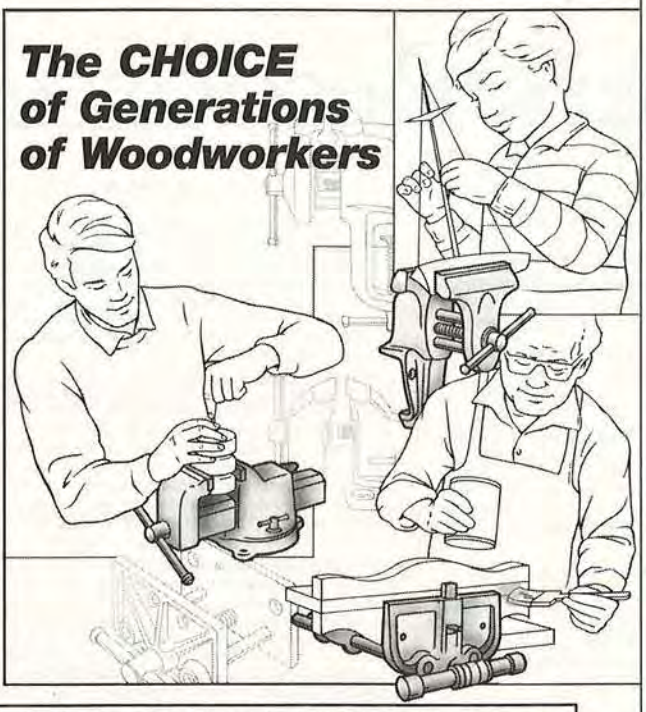

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INTERNATIONAL TOOL CORPORATION CATALOG — features the finest tools & accessories at the absolute lowest prices anywhere! Whether you're a home woodworker or an industrial user, you will find an incredible selection featuring Porter Cable, Bosch, Skil, Freud, Delta, Powermatic, Milwaukee, Makita, Hitachi, and many, many more. We offer same day shipping, the most knowledgable sales staff and free shipping on most UPS orders in the contiguous U.S. **INTERNATIONAL TOOL CORP.** $2.00. *Circle No. 49.*

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THE LATEST SUNHILL MACHINERY CATALOG—If you're looking for quality woodworking machinery at affordable prices, Sunhill has what you need. Table saws, planers, jointers, sanders, shaper cutters and more. All machines carry one year warranty. Catalog. **SUNHILL MACHINERY.** Free. *Circle No. 97.*

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PROJECT PLANS—Full-size patterns for over 850 easy-to-build woodworking projects. Nation's leading source for scroll saw patterns, cow projects, toy plans, yard ornaments, wood furniture, etc. Over 3000 hard-to-find specialty items. Send for big new 100-page full-color catalog. **MEISEL HARDWARE SPECIALTIES.** $2.00. *Circle No. 401.*

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OUR QUEEN ANNE FURNITURE KITS—are ready to assemble and finish. They include dining room chairs, a variety of occasional tables, and a personal desk. All are made in solid cherry, oak, walnut, and mahogany. We also stock individual Queen Anne legs for every project. Complete information in our brochure packet. **ADAMS WOOD PRODUCTS.** Free. *Circle No. 1002.*

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EASY DOES IT—with HTC'S power tool accessories. Discover many unique items, designed only with you, the dedicated woodworker, in mind. Make your machinery safer, increase the working area of your shop and accomplish nearly impossible tasks easily, quickly, accurately. Full-line catalog and price list. **HTC PRODUCTS, INC.** Free. *Circle No. 1245.*

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KEEP YOUR SHOP AND LUNGS CLEAN—Enjoy the benefits of a large yet mobile workbench. The Dust Eliminator Workbench removes dust from sanding before it becomes airborne. For dust created by other tools, common sense tells us that wood, even as dust, has weight and is affected by gravity making it more difficult to be collected above the woodworker's head. This is why it is much more efficient to collect dust particles at waist level. The workbench top is made of select and better grades of hard maple, the traditional choice of wood craftsmen. **WOODMARK.** $1.00. *Circle No. 1295.*

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BANDSAW BLADES FOR ALMOST ANY TYPE BANDSAW—both wood and metal cutting. Also circular saw blades, router bits, sanding belts and discs. Send for catalog. **BUCKEYE SAW CO.** $1.00. *Circle No. 1307.*

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WOODWORKERS!—Have you created a plan or pattern? Would you like to see it in a catalog? Earning income! Your plan or pattern can be in our next catalog. Send for information on how to submit your plan for review. **CLARK'S BENCH TABLES.** $2.00. *Circle No. 1510.*

SECURE FUTURE IN FURNITURE RESTORATION WITH MINUTEMAN—Earn $200–$1,000 per day stripping, repairing, refinishing, mirror resilvering, veneering and more at home or in shop; part- or full-time. We provide complete training; no experience necessary. FREE workshop teaches you latest in furniture restoration. Featuring Amity, the first complete line of water-based furniture restoration products. Catalog. **MINUTEMAN.** Free. *Circle No. 1661.*

MISCELLANEOUS

AMERICAN STEEL SPAN BUILDINGS—Designed with the do-it-yourselfer in mind. Our buildings are made in a heavy gauge steel with a 20-year warranty. Everything is pre-cut and pre-drilled, and just bolts together. A quality pre-engineered building with style and structural integrity at a price that everyone can afford. 3 models to choose from! **AMERICAN STEEL MARKETING CORP.** Free. *Circle No. 1780.*

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SUNSETTER® RETRACTABLE AWNINGS—Outsmart the weather! Don't let the hot sun or a passing shower stop you from enjoying your deck or patio. Send for our video and information package showing how SunSetter Retractable Awnings let you get far more use of your deck, rain or shine. **JIL INDUSTRIES.** $1.00. *Circle No. 1978.*

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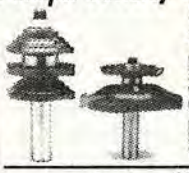

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Continued from page 92

Two-stage lid snags big chips and heavy dust

One problem all single-stage dust collectors share is that they lose efficiency as their bags fill up with debris. That's because the filter surface area available for filtering the air shrinks. Until now, the only solutions were to install an expensive cyclone separator between the source of the dust and your dust collector, build your own plywood and sheet-metal separator, or buy a two-stage dust collector. But this new, all-plastic, Dust Collection Separator does a great job at a fraction of the cost of these other separator options.

To use the Dust Collection Separator, you simply place it over the top of a trash can or barrel with a 24" outside diameter. Connect the inlet hose of your dust collector and the outlet hose from your tool to the separator and go to work. The cyclonic airflow created inside the barrel causes the wood chips and heavier dust particles to fall to the bottom. Only the fine dust particles end up in the dust collector bags.

With this device I could fill my trash can about 80 percent before I had to empty it—a big boost in convenience. And I rarely need to empty my dust collector bags.

The holes in the lid are sized to accept 4" flexible hoses, but there is no flange to clamp onto or sealing device to secure them. You just stick the hoses in the holes. Despite this loose arrangement, no dust escaped from the hoses, and the small amount of air leakage didn't affect the performance of my system.

—Tested by Dave Henderson

PRODUCT SCORECARD

Dust Collection Separator

Performance	★ ★ ★ ★ ☆
Price	$41.95 ppd.
Value	★ ★ ★ ☆ ☆

Tool Crib of the North, P.O. Box 14040, Grand Forks, ND 58208-4040
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Continued on page 102

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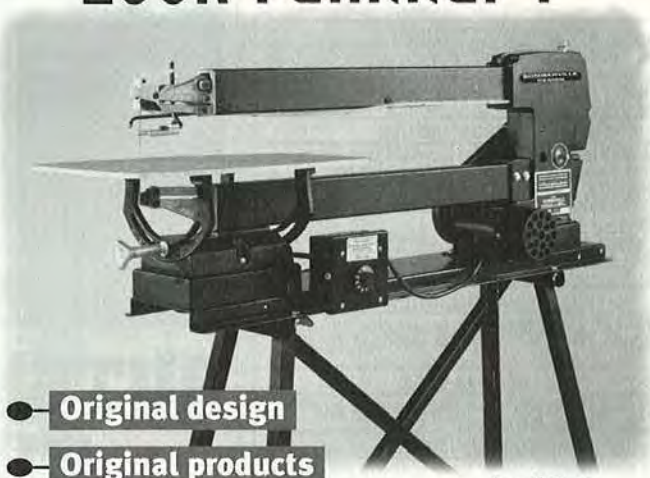

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PRODUCTS THAT PERFORM — SHOP TESTED

Continued from page 100

Wax keeps tools rolling smoothly

For years, I've used a block of paraffin to lubricate certain machine parts and reduce metal-to-metal friction around the shop. Paraffin works fine for these applications, but I recently discovered an improved version of this old favorite.

Lube Wax Stick is a paraffin-based wax that has been formulated to be a bit more slippery than ordinary paraffin. I applied some Lube Wax to the rails of my tablesaw fence to help it glide smoother, and to a drill bit for drilling through some steel. Compared with paraffin, I found Lube Wax easier to apply and better at reducing friction. And unlike paraffin, I noticed that Lube Wax maintains its slipperiness even when the temperature in my shop dips below 50°.

Also, I found this product convenient to use and store. To dispense the wax, you just push on the bottom of the container. And the manufacturer puts a hole in the cap so you can hang it on a nail or hook.

—Tested by Dave Henderson

PRODUCT SCORECARD

Lube Wax Stick

Performance	★ ★ ★ ★ ★
Price	about $3.75 for a 2.5-oz tube
Value	★ ★ ★ ★ ☆

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DELTA TOOLS

Model	Description	List	Sale
31-280	Sanding Center w/ stand	1250	789
31-695	6" Belt/9" Disc Sander	441	329
23-700	Wet/Dry Grinder	206	149
23-710	New Sharpening Center	217	169
23-680	6" Bench Grinder 1/4 HP	80	69
11-950	8" Drill Press	176	128
31-460	4" Belt/Disc Sander	198	135
40-560	16" 2 speed Scroll Saw	230	165
40-540	NEW 16" var/spd Scroll Saw	249	179
11-990	12" Bench Drill Press	255	184
11-090	32" Radial Bench Drill Press	405	305
43-505	1/2" Bench Router/Shaper	398	299
22-540	12" Bench Top Planer	Sale	369
36-220	10" Compound Mitre Saw	294	199
28-185	Bench Band Saw	213	175
37-070	NEW 6" w/spd Bench Jointer	351	245
14-650	Hollow Chisel Mortiser	380	239
33-990	10" Radial Arm Saw	981	779
33-055	8-1/4" Sawbuck comp w/legs	846	665
36-905	30" Unifence	346	245
36-906	50" Delta Unifence	444	319
36-755	10" Tilting Arbor Saw	Sale	1019
17-900	16-1/2" Floor Drill Press	490	399
37-190	6" Deluxe Jointer	603	489
36-275	8-1/4" Builders Saw	358	259
36-210	10" Compound Mitre Saw	344	225
36-040	8-1/4" Compound Mitre Saw	190	135
36-070	10" Mitre Saw	217	165
34-555	Sliding Table	487	325
34-444	10" Contractors Table Saw	Sale	615
36-250	10" Slide Compound Saw	825	489
36-230	12" Compound Mitre Saw	480	345
31-780	Oscillating Spindle Sander	253	188

DELTA REBATES !
Prices shown are before rebate !

$25.00 rebate

46-700	12" Wood Lathe	575	479

$50.00 rebate

28-275	14" Band Saw 3/4 HP	Sale	649
28-280V	14" Band Saw 1 HP motor	Sale	798
34-445	10" Table Saw w/30" fence	Sale	839
22-675	NEW DC380 15" Planer	Sale	1175
43-355	3/4" Shaper 1-1/2 HP	Sale	849

$75.00 rebate

37-154	6" Jointer DJ-15	Sale	1289

MILWAUKEE TOOLS

6527	NEW Sawzall with case	343	169
6528	above Sawzall w/wired cord	339	185
0408-6	12V Drill w/kyls chuck&2 batt	380	172
0224-1	3/8" Drill 4.5 amp magnum	236	132
0234-1	1/2" Drill 4.5A mag 0-850 rpm	255	129
0235-1	1/2" Drill w/keyless chuck	255	129
0244-1	1/2" Drill 4.5A mag 0-600 rpm	255	129
0222-1	3/8" Drill 3.5 amp 0-1000 rpm	213	119
0228-1	3/8" Drill 3.5 amp 0-1000 rpm	207	118
0375-1	3/8" close quarter Drill	255	148
0379-1	1/2" close quarter Drill	288	165
6546-1	cdls Scrwdvr 200 & 400 rpm	150	86
6547-1	6546-1 w/bits,1/4" chuck & cs	185	105
5399	1/2" D-hdle Hammer Drill Kit	356	194
6507	Original SawZall with case	278	149
5397-1	3.8" w/ spd Hammer Drill Kit	275	145
5371-1	1/2" w/ spd Hammer Drill Kit	360	194
3107-1	1/2" w/spd right angle Drill Kit	411	234
3300-1	1/2" w/ spd right angle Drill	378	199
5680	Router 2 HP w/ collets	367	165
6142	4-1/2" Grinder w/cse & acc.	224	125
6365	7-1/4" Circular Saw 13 amp.	229	125
6368	6365 w/fence, bide,& cse	259	142
6256	Top Handle Jig Saw	278	149
6490	10" Mitre Saw	496	265
6491	6490 w/ carbide blade & bag	594	328
6494	10" Compound Mitre Saw	585	315
0431-1	12V Drill w/ 2 batteries	441	229
6266-6	NEW Top Handle Jig Saw	315	165
6496	10" Slide Compound Saw	1050	569

FREUD CARBIDE TIPPED SAW BLADES
5/8" Bore - Industrial Grade

Item	Description	Teeth	List	Sale
LU72M010	Gen Pur. A.T.B.	10" 40	69	42
LU82M010	Cut-off	10" 60	93	47
LU84M011	Comb	10" 50	78	42
LU85M010	Super Cut-off	10" 80	115	59
LM72M010	Ripping	10" 24	69	38
LU73M010	Cut off	10" 60	84	45
LU87M010	Thin Kerf	10" 24	72	44
LU88M010	Thin Kerf	10" 60	88	49
LU98M010	Ultimate	10" 80	128	68
LU91M010	Compnd Mitre	10" 60	88	54
F410	Quiet Blade	10" 40	95	49
F810	Quiet Blade	10" 80	135	74
TK303	7-1/4" Finishing	40	38	25
TK906	10" Combo	50	53	32
SD308	8" Dado - Carbide		230	119
SD506	6" carbide w/case & shims		292	145
SD508	8" carbide w/case & shims		344	168
FB100	16 piece Forstner Bit Set		338	194
94-100	5 pc. Router Bit Door System		320	169
BF3	NEW Router Table		495	289

The following tools have a $30.00 rebate. Price shown is before rebate.

FT2000E	3-1/4 HP variable speed Plunge Router	410	205
JS102	Biscuit Jointer w/fence & cs	355	179

The following tool has a $50.00 rebate. Price shown is before rebate.

TR215	8-1/2" Slide Cmpd Mitre Saw		369

WAP VACUUMS

Model	Description	List	Sale
766RDF	10 gallon turbo vacuum	845	465
766RDF-D	"Drywaller" 10 gal turbo vacuum	915	549
766RDF-DAS	Above vac w/ auto start	950	589

MAKITA TOOLS

6172DWE	3/8" v/spd Drill Kit w/ 2 batt	222	109
5090DW	3-3/8" Saw Kit 9.6 volt	280	148
DA391D	3/8 angle Drill 9.6V	166	109
DA391DW	3/8" angle Drill Kit 9.6V	341	179
ML900	Incandescent Flashlight 9.6V.		37
6095DWE	9.6 volt Drill Kit w/2 batt	Sale	125
6095DWLE2	6095DWE w/flashlight	Sale	138
6095D	6095DW Drill only & cse	Special	79
632007-4	9.6 volt Battery	47	30
632002-4	7.2 volt Battery	39	28
6201DWHE	9.6V 3/8" Drill Kit w/2 batt	351	159
6211DWHE	12V 3/8" Drill Kit w/2 batt	368	169
6311DWHE	12V 1/2" Drill Kit w/2 batt	399	205

NEW CORDLESS DRILLS
WITH 2.0 AMP HIGH CAPACITY BATTERIES

6213DWAE	12V 3/8" Drill Kit	325	185
6233DWAE	14.4V 3/8" Drill Kit	358	199

SUPER CORDLESS SPECIALS

6073DW	7.2V cdls Drill Kit. Variable speed & clutch. Complete with battery, charger, & case.	Super Sale 99
T220DW	9.6 volt Stapler Kit. Complete with battery, charger, & case.	Super Sale 99

9900B	3"x21" Belt Sander w/bag	347	179
9924DB	3"x24" Belt Sander w/bag	360	189
4301BV	Orb. var. spd Jig Saw 3.5A	292	155
JR3000V	w/ spd Recip Saw w/case	264	135
9820-2	Blade Sharpener	433	215
N1900B	3-1/4" Planer with case	263	129
1912B	4-3/8" Planer	352	189
N9514B	4" Disc Grinder 4.6 amp	118	65
DA3000R	3/8" Angle Drill	355	175
2708W	8-1/4" Table Saw	637	309
6405	3/8" Drill Rev. 0-2100 rpm.	115	65
6510LVR	3/8" Drill Rev. 0-1050 rpm.	188	98
6013BR	1/2" Drill Rev. 6 amp	270	145
9401	4" x 24" Belt Sander w/bag	458	219
5007NBK	7-1/4" Circ Saw w/ case	250	125
5037NB	NEW 7-1/4" Circular Saw	288	148
LS1011	10" Slide Compound Saw	995	479
LS1211	12" Slide Cmpd Saw	1620	779
3901	Plate Joiner Kit	376	205
3612C	NEW 3 HP Plunge Router	492	259
LS1040	NEW 10" Compound Miter Saw		

SENCO AIR NAILERS

SFN1+	Finishing Nailer 1" - 2" w/ cs	448	345
SN325	Nailer 1-7/8" - 3-1/4"	665	419
SLP20	Pinner w/cs 5/8 - 1-5/8"	422	275
SKS	Stapler 5/8" - 1-1/2"	390	279
SN70	Framing -Clip Hd 2"-3-1/2"	725	449
SN60	Framing -Full Hd 2"-3-1/2"	708	449
SN65	15% more power than SN60	709	469
SFN40	Finish Nailer 1-1/4 - 2-1/2	569	389

BOSTITCH AIR NAILERS

N80S-1	Stick Nailer	Super Sale	339
N80C-1	Coil Nailer	Sale	339
RN45	Coil Roof Nailer 3/4 - 1-3/4	845	369
N60FN-2	Finishing Nailer	557	335
BT35-2	Brad Tacker 5/8" - 1-3/8"	254	155
BT35-2K	BT35-2 w/ cse, oil, & brads	279	165
CWC100	1 HP Pancake Compressor	440	289
MIIIFS	Flooring Stapler 15 gauge	902	529
S32SX-1	Finish Stapler-1/2" - 1-3/8"	245	155
S32SX-1K	S32SX-1 with case & oil	269	165

SKIL TOOLS

77	7-1/4" Worm Drive Saw	Sale	144
77M	NEW 77 Mag Worm Saw -	Sale	165

PANASONIC CORDLESS

EY6181CRKW	9.6V Drill Kit w/ 2 batteries, 1 hour charger, & case	307	169
EY6181EQK	9.6 volt Drill with 15 min. charger, case & Ironman battery	315	169
EY6100CRKW	12 volt Drill Kit w/ 2 batteries, 1 hour charger, & case	379	168
EY6100CQKW	Same as EY6100CRKW but has 15 minute charger	409	209
EY6100EQKW	12V Drill kit w/ 2 Ironman batteries, 15 min. charger, & case	379	199
EY6101SQK	12 volt 1/2" Drill w/ 15 min. charger, diagnostic battery, & case	438	249
EY3502EQKW	NEW 4-3/8" 12V Metal Cutting Saw Kit	500	289

PASLODE IMPULSE GUNS

IM250	Trimpulse Finish Nailer Kit	1130	548
IM325	Impulse Framing Nailer Kit	1130	548
CT325SS	Cdls Framing Nailer Kit	1120	495

CLAYTON OSCILLATING SPINDLE SANDERS

140	Portable sndr w/ 4-1/2" spindle	625	559
146	Portable sander w/ 9" spindle	685	609
100	Floor mount sndr 4-1/2" spindle	785	709
106	Floor mount sander 9" spindle	845	759

SIOUX TOOLS

8030	3/8" var/spd Drill	263	145
8000	3/8" var/spd close qtr Drill	211	125
690	5" Air Random Orbit Sander	228	132

DEWALT TOOLS

Model	Description	List	Sale
DW321K	NEW Jigsaw Kit	300	169
DW364	7-1/4" Circ. Saw w/brake	294	158
DW610	1-1/2 HP 2 handle Router	266	152
DW411	1/4 sheet Palm Sander	88	58
DW100	3/8" Drill, 4 amp,0-2500 rpm	118	68
DW682K	Biscuit Joiner with case	448	219
DW705	12" Compound Mitre Saw	734	359
DW625	3 HP v/ spd PlungeRouter.	Sale	275
	DW625 router comes with DW6966 fine depth adjuster and 8-piece template guide set		
DW621	NEW 2 HP Plunge Router	400	218
DW675K	3-1/8" Planer with case	292	164
DW431	3 x 21 v/spd Belt Sander	338	184
DW421	5" Palm Ran. Orb Sander	144	74
DW444	6" Ran Orb Sander	266	139
DW443	DW444 w/hook & loop pad.	266	139
DW673K	NEW Laminate Trimmer Kit	364	205
DW935K	14.4V 5-3/8" Trim Saw Kit with 2 batteries	444	237

DEWALT CORDLESS DRILLS

DW952K	3/8" variable speed w/ two 9.6V XR batteries	284	139
DW962K	23/8" variable speed w/ two 9.6V XR batteries	330	179
DW972K	23/8" variable speed w/ two 12V XR batteries	362	189
DW904	12 volt flashlight	48	29.95
	DW972K-2 drill & DW904 flashlight	Sale	205
DW991K	23/8"variable speed w/ two 14.4V XR batteries	415	225
DW994KQ	1/2" variable speed w/ one 14.4V XR batteries	458	235
DW994KQ-2	above drill w/ 2 batt.	Sale	259
DW996K	1/2" v/spdw/ two 14.4 XR batt		245
	Above drill kits come w/ charger & steel case!		
DW991KS-2	DW991K drill, DW935 trim saw, & case	Sale	349

HITACHI TOOLS

C8FB2	8-1/2" Slide Compound Saw	1169	489
C10FC	10" Mitre Saw	533	209
C10FS	10" Slide Compound Saw	1627	739
G12SA	4-1/2" Grinder 6.9 amp	177	95
NR83A	Framing Nailer 2 - 3-1/2 Full Head	900	425
NR83AA	Framing Nailer 2 - 3-1/2	922	429
NT65A	16 ga. Brad Nailer 1 - 2-1/2	749	325
NV45AB	Coil Roofing Nailer 7/8 - 1-3/4	935	419
EC6B	1 HP Oil Compressor	540	279
EC6C	1 HP Oil-less Compressor	580	295

BIESEMEYER FENCES

B-50	50" Commer. Saw	443	325
T-SQUARE 52	52" Homeshop	360	269
T-SQUARE 40	40" Homeshop	335	249
T-SQUARE 28	28" Homeshop	325	239

PONY CLAMP FIXTURES

Model	Description	List	Sale	Lots of 12
50	3/4" Black Pipe	15.45	8.10	92.50
52	1/2" Black Pipe	12.65	6.95	74.95

BOSCH

Model	Description	List	Sale
1587VS	Top Handle "CLIC"Jig Saw	292	139
1587VSC	1587VS saw with case	Sale	149
1584VS	Barrel"CLIC"Jig Saw	288	139
	Bosch Metal Case for above Jig Saws		24
	Bosch 30 blade assortment for Jig Saws		28.99
	1584VS or 1587VS with steel case and 30 Bosch blades	Sale	175
3270DVS	3"x21" v/spd Belt Sander	301	165
1276D	NEW 4"x24" Belt Sander	379	219
1275DVS	NEW 3"x24" v/s Belt Sndr	379	219
1276DVS	NEW 4"x24",v/s Belt Sndr	408	229
1347AK	4-1/2" Grinder w/cs & acc	172	105
1194VSR	1/2" w/ spd Hammer Drill	272	155
1194VSRK	above Drill w/ case	303	169
1604A	1-3/4 HP 2 Handle Router	269	142
1604AK	same as above w/cse & acc	337	185
1613EVS	2HP v/s Plunge Router	369	199
1615EVS	3 HP v/s Plunge Router	536	289
1634VSK	NEW Recip Saw 10.5 amp	335	159
3310K	NEW 12V T-handle Drill Kit	345	178
3610K	NEW 14.4V Drill Kit	354	195
3107DVS	NEW 5" Random Orbit Sander	165	98
3107DVSK	3107DVS with case	195	115
3725DVS	5" Random Orbit Sander	256	149
3727DVS	6" Random Orbit Sander	266	154
B3915	10" Slide Compund Saw	1050	589
B1650K	Biscuit Joiner	286	169
B7000	Corner Detail Sander	126	68
B7001	B7000 w/ variable speed	Sale	89.95
B4050	In Line Jig Saw	206	119
11230EVS	SDS-max 1-1/2" Rtry Hmr	910	519
11231EVS	SDS-max 1-3/4" Rotary Hammer	1363	785
11223EVSN	NEW SDS-max 2" Rotary Hammer	1595	915
11224VSR	7/8" SDS Rotary Drill	404	229

STABILA LEVELS

24640	24" Level w/ hand holes	62.20	43
24670	48" Level w/ hand holes	79.70	55
24680	72" Level w/ hand holes	145.45	99
27170	48" Level w/o hand holes	71	49
27000	78" Level w/o hand holes	146	102
80LMS	NEW Laser Level System	532	365

AIRY AIR NAILERS

Model	Description	List	Sale
0241SK	Brad Nailer 3/8"-1 9/16"	180	96
0250SK	Brad Nailer 3/4"-2"	296	164
0626SK	1/4" Crown Stapler 3/8"-1"	194	104
0645	1/4" Crown Stapler 3/4"-1-9/16"	310	175
	Above Nailers come w/case, fasteners, oil & wrenches		
0565T	Angle Finish Nailer 1"-2-1/2"	386	205

PORTA NAILER

401	Porta Nailer complete	295	209
501	Face Nailer complete	295	209

DAVID WHITE

LP6-20	Sight Level package - 20x	329	215
LP6-20XL	LP6-20 w/9056 tripod & 7620 rod		275
LT8-300	Level Transit - 26x	739	489
LT8-300P	above Level w/ optical plum	869	565
LT6-900	Level Transit - 20x	419	269
ALT6-900	Automatic Level - Transit -18x	666	429
ALTP6-900	above Level w/tripod & rod	799	499
ALP6-18HD	above Level w/tripod & rod	599	395
LL100	Finish Line Laser Level	199	135
ML200	NEW Visible Beam Laser	979	799

RYOBI SPECIALS

RE600	3 HP Plunge Router	500	228
BE321	3"x21" w/ spd Belt Sander	310	148
BT3000	10" Table Saw w/ stand	1125	529
AP12	12" Bench Planer	884	389
OSS450	Oscillating Spindle Sander	340	159
DC500	Detail Carver	120	64
HT20VSK	NEW Multi Tool	115	59
CD125K	12V cordless Drill w/ 2 batt	175	109
CTH1442K	14.4V 3/8" Drill Kit	275	159
Msxe6362	FEIN Triangle Sander v/spd		205
Msx625	FEIN New Air Triangle Sander		195
LPN672	PONY Air Palm Nailer w/glove		94.99
RTM01	ROTOZIP Drywall cut out unit		68.95

QUAL-CRAFT PRODUCTS

2200	Pump Jack	79	58
2201	Pump Jack Brace	30	20
2203	Pump Jack guard rail holder	31	23
2204	Workbench & rail holder combo	53	39
	Buy any 6 (can be assort.) deduct 10%		
2601	Wall Jack	167	108
	Lots of 4 deduct additional 10%		

PORTER CABLE

9444	New Profile Sander Kit	220	119
7499	Ultimate Cut-out tool	119	69
97499	7499 w/ case & bits	150	89
690	1-1/2 HP Router 8 amp	278	142
90690	690 Router w/ steel case	309	159
691	1-1/2 HP Router D-handle	303	158
693	1-1/2 HP Plunge Router Base	338	184
6931	Plunge Router Base	139	79
695	1-1/2 HP Router/Shaper	418	235
696	Heavy Duty Shaper Table	238	135
351	3"x21" Belt Sander w/o bag	302	165
352VS	3x21v/s Belt Sander w/bag	321	165
360	3"x24" Belt Sander w/ bag	397	214
361	3"x24" Belt Sander w/o bag	377	204
362	4"x24" Belt Sander w/ bag	412	224
97751	1/2" w/spd Hammer Drill w/cse	274	155
9125	NEW 3-1/4" Planer Kit w/ case	250	145
9118	Porta Plane Kit 7 amp	400	229
505	1/2 sheet Pad Sander	249	129
97549	Top handle Jig Saw 4.8 amp w/ case & blades	275	144
330	Speed Block Sander 1/4 sheet	120	65
556	Biscuit joiner w/5556 fence	Sale	139
345	6" Saw Boss 9 amp	207	114
9345	345 comp. w/cse & carb blde	237	138
9647	TIGER CUB Recip. Saw	230	134
9637	Full var/spd Recip Saw 8 amp	276	148
7519	3-1/4 HP Router 2 Handle	469	255
7518	3-1/4 HP 5 speed Router	534	279
7539	3-1/4HP v/spd Plunge Router	534	279
7310	5.6 amp Laminate Trimmer	176	98
97310	Laminate Trimmer Kit comp	336	198
7335	5" Random Orbit Sander	254	145
97355	7335 w/ case & dust pick-up	274	145
7336	6" Random Orbit Sander	259	138
97366	7336 w/ case & dust pick-up	284	149
73333	Dust Collection system		24.50
9853K	12V 3/8" Drill Kit w/ 2 batt	305	158
8500	12V battery for above drills	Sale	45
332	Palm Grip Rndm Orb Sander	133	72
333	above sander with dust bag	148	79
334	333 Sander with PSA pad	148	79
550	Pocket Cutter with case	352	195
310	Production Lam. Trimmer	270	152
347	7-1/4" "Framers" Circ Saw	230	129
347K	347 Saw w/ plastic case	250	134
743	347 Saw - left hand version	230	129
743K	743 Saw w/ plastic case	250	134
447	347 Saw with brake	259	139
843	447 Saw-left hand version	259	139
7800	Drywall Sander	589	335
7810	Wet/Dry Vac for above sander	452	259
9737	New Tiger Recipro Saw	307	165
BN125	Brad Nailer -18 ga. 5/8" - 1-1/4"	144	95
BN200	Brad Nailer -18 ga. 3/4"-2"	238	145
FN200	Finish Nailer -16 ga. 3/8"-2"	270	165
FN250	Finish Nailer -16 ga. 1"-2-1/2"	362	225
DA250	Angle Nailer -15 ga. 1-1/4"-1-1/2"	412	249
FC350	Framing Nailer - clipped head	558	319
FR350	Framing Nailer - round head	558	319
9830	NEW 9.6V Drill Kit w/ 2 batt	284	139
9862	NEW 12V Drill Kit w/ 2 batt	362	179
9872	NEW 14.4V Drill Kit w/ 2 batt	424	205

FREE FREIGHT TO THE CONTINENTAL STATES ON EVERY ITEM • GIFT CERTIFICATES NOW AVAILABLE

Color from Canada

At *WOOD*® magazine, we enjoy doing the research sometimes needed to answer readers' woodworking questions. William Skeffington of Markham, Ontario, Canada, sent us an especially interesting one.

He wanted to know the species of the brightly colored trio of wood samples (shown *top right*) he enclosed with his letter. "I get this wood from my place of work," he wrote. "It comes from Loudon, Tennessee, in the form of pallets." Bill salvages some of it for his wooden pictures (see the example *right*). He also was worried that the stock, because of its color, just might be toxic.

Given its U.S. origin, the wood wasn't hard to identify. It is tuliptree (*Liriodendron tulipifera*), or yellow poplar, as most woodworkers know it. And it's a popular pallet wood. In certain growing conditions, the normally whitish wood of yellow poplar becomes discolored by purple, black, and yellow streaks. Bill's samples are, however, the brightest of any the staff have seen. And this Canadian woodworker was relieved to find out his rainbow-hued stock wouldn't make him ill.

Nature did the staining on these pieces of tuliptree, also known as yellow poplar.

William Skeffington used all salvaged scrapwood for this humorous picture.

Fencing in with wood cost farmers millions

According to the late author and historian Eric Sloane, wooden fences built for the purpose of keeping livestock *in* were uniquely American. And valuable, too.

Following the Civil War, the U.S. Army inventoried the nation's fences because they had proved their worth for cover in battle. The final estimate was over two billion dollars' worth of wooden fences, and a cost for repairing them of $100 million annually!

Farmers of the time didn't settle for any old wood for their fences, either. They preferred, in order, locust, cedar, chestnut, walnut (Yikes!), and white oak. If none of these decay-resistant woods were locally available, the fence cost went up because the stock had to be hauled in from a distance. No wonder barbed-wire fencing was so immediately successful when it appeared on the agricultural scene in the late 1870s.

Illustrations: Jim Stevenson
Photographs: Wm. Skeffington; John Hetherington

Forest barber chairs aren't for haircuts

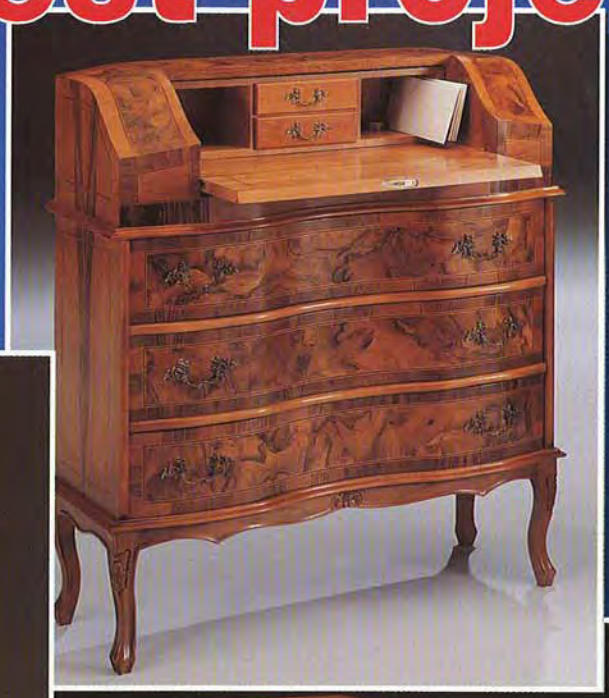
When a tree being felled by a logger splits up the middle from the cut, it becomes what they call a barber chair. The stump has a vertical chair back and seat. Some loggers also call the phenomenon a tombstone, because half of the butt kicks back dangerously.

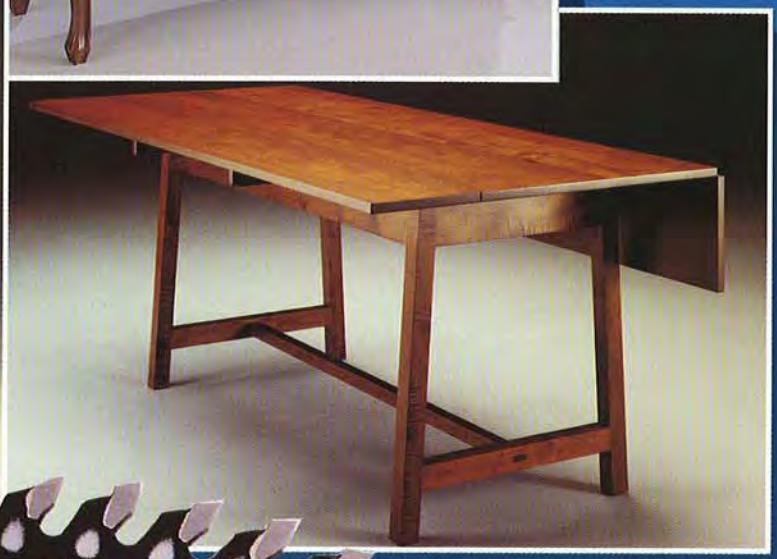
Prizewinning plans

Professional craftsman and perennial Build-A-Toy® contest winner Mike Jagielo has decided to share more than his secrets to success (See "Build-A-Toy Winners Tell All...Almost," *WOOD* magazine, October 1996). In response to reader queries over the years about his remarkable pull toys, he's now made plans available for some of his past prizewinners. For information, drop a line with a SASE to: Mike Jagielo, 9965 Two Lakes Rd., Almond, WI 54909.

Print this article

Your best projects





Deserve the best cuts

When your work requires absolute precision and quality cuts, there is no substitute for the Freud LU85 -- at any price.

The LU85 produces a flawless cut that requires no sanding. It eliminates chipping and will improve the fit and beauty of your most demanding projects.

Only the award winning LU85 can give you this kind of performance, because no other blade is manufactured with the same care, strict tolerances and fine materials.

The exclusive long-life, titanium-bonded micro-grain carbide tips are ground with special angles, and the laser-cut extra stiff plate is bonded with a thick layer of Teflon® using a special process. This allows the blade to glide through the wood and eliminates pitch build-up.

The LU85 is a precision cut-off saw, ideal for your mitre saw or table saw, for the cutting of natural woods, low pressure laminates and mouldings.

SIZE	TEETH	BORE
8"	64	5/8"
9"	72	5/8"
10"	80	5/8"
12"	96	1"
14"	108	1"
15"	108	1"

freud®

Precisely what you need.

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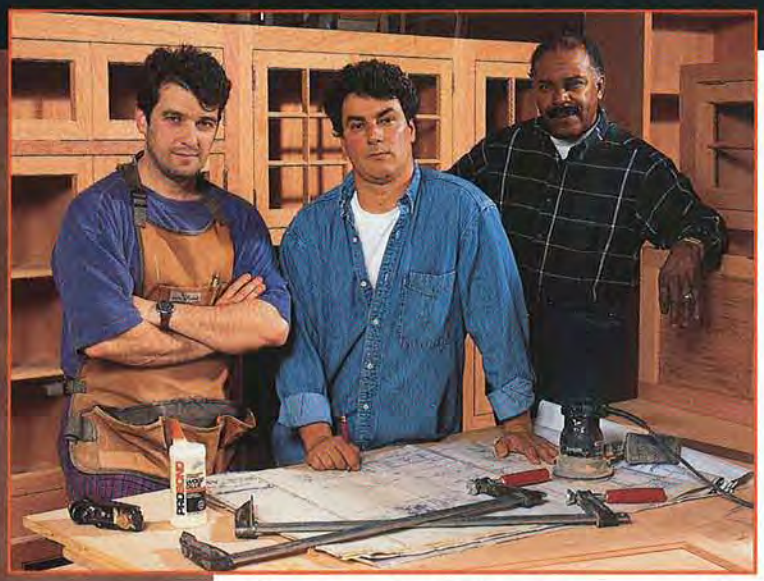
THESE ARE THE BRAINS BEHIND NEW PROBOND WOOD GLUE.



What happens when you listen to wood-working professionals?

A new wood glue that meets their every expectation.

Introducing ProBond™ Professional Strength Wood Glue.

The features that woodworkers want and need are formulated into ProBond Wood Glue. Extensive field testing among professionals has confirmed ProBond's outstanding performance. In fact, among those expressing a preference, ProBond was rated higher in overall quality than the leading brand.

Ease of Use Combined with Firm, Snug Bonding. A glue with strong wet tack. It sets in just 15 to 25 minutes. With minimal clamping. After curing, **the bond is actually stronger than the wood itself.**

It pours easily. It's sandable and paintable. Plus it's resistant to heat and moisture.

New Bottle Works Great. ProBond's revolutionary bottle helps get the job done fast. The size and shape fit your hand perfectly. The offset spout delivers the right amount of glue right where you want it. Every time. Even in tight corners.

We even designed the cap and wide-neck bottle to be easy to open and easy to fill.

ProBond Wood Filler is as Professional as Our Glue. ProBond Professional Strength Wood Filler has a totally unique solvent formula. Dries fast. Won't crumble. Resists shrinking and cracking. It's easy to sand. It's stainable and available in colors that match most popular woods.

So next time you need wood glue or wood filler, step up to new ProBond.

CONTRACTOR'S ELMER'S GRADE

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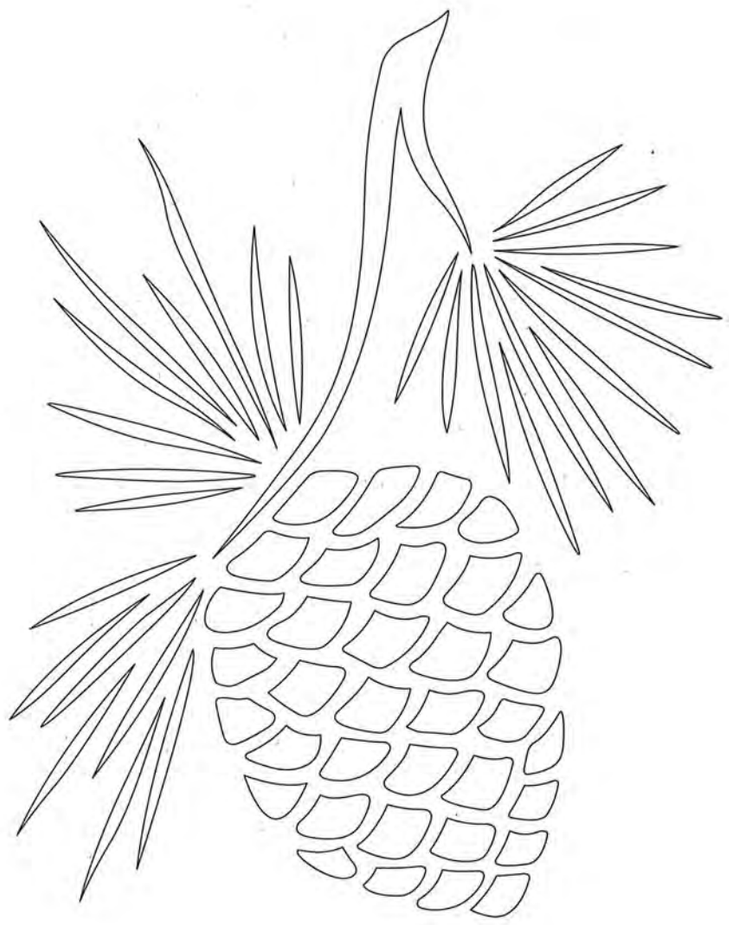


FULL-SIZED
STENCIL PATTERN

Better Homes and Gardens®

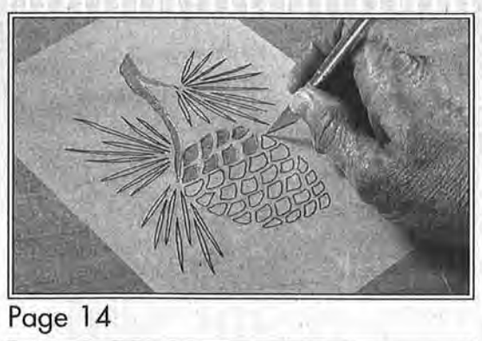
WOOD® PATTERNS™

Full-sized for your woodworking convenience

NOVEMBER 1996 **ISSUE 92**

Dear Reader: As a service to you, we've included full-sized patterns on this insert for irregular-shaped and intricate project parts. You can machine all other project parts using the Bill of Materials and the drawings accompanying the project you're building.

•Stencil pattern •Farm truck •Routing patterns



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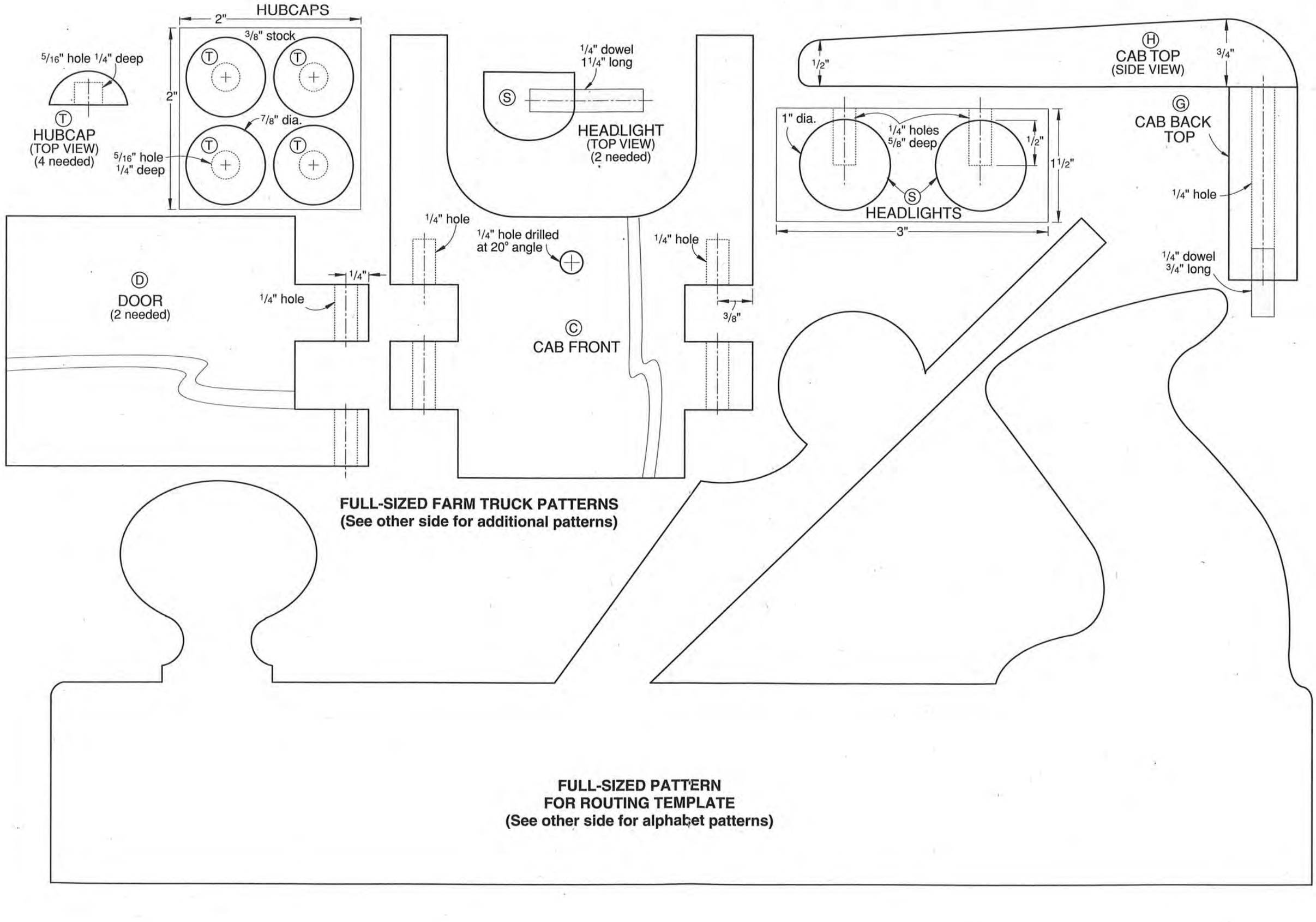
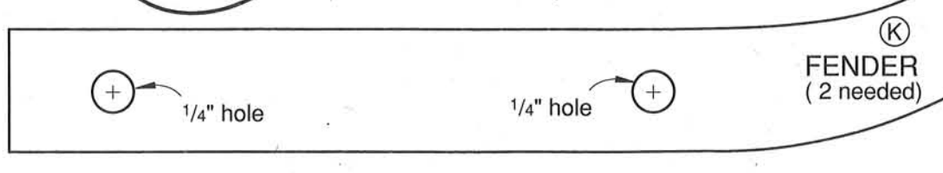
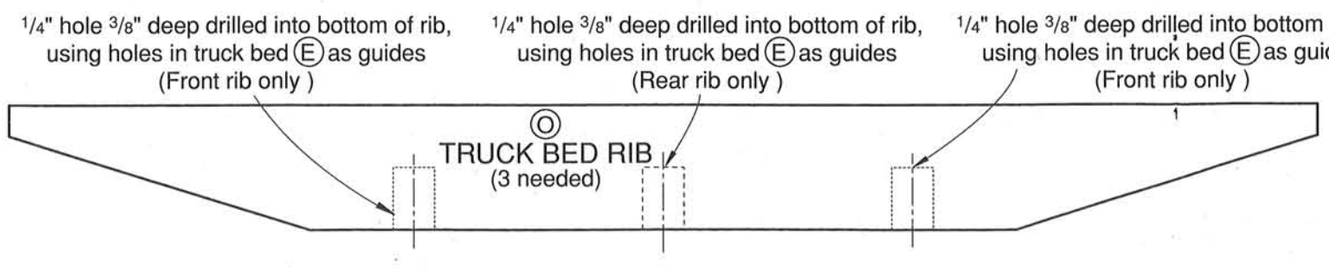
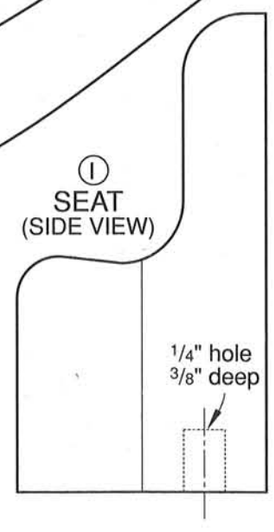
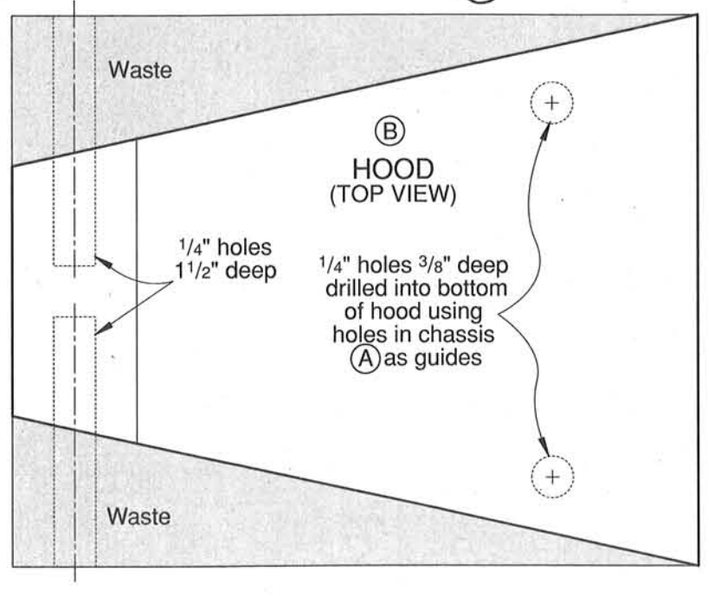


FULL-SIZED FARM TRUCK PATTERNS
(See other side for additional patterns)

FULL-SIZED PATTERN
FOR ROUTING TEMPLATE
(See other side for alphabet patterns)

FULL-SIZED FARM TRUCK PATTERNS




1/4" hole 3/8" deep drilled into bottom of rib, using holes in truck bed E as guides (Front rib only)
1/4" hole 3/8" deep drilled into bottom of rib, using holes in truck bed E as guides (Rear rib only)
1/4" hole 3/8" deep drilled into bottom of rib, using holes in truck bed E as guides (Front rib only)
O
TRUCK BED RIB
(3 needed)